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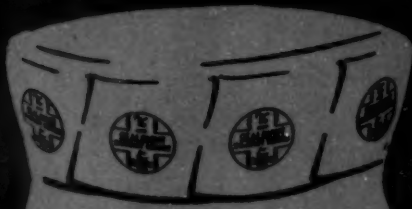

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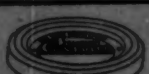

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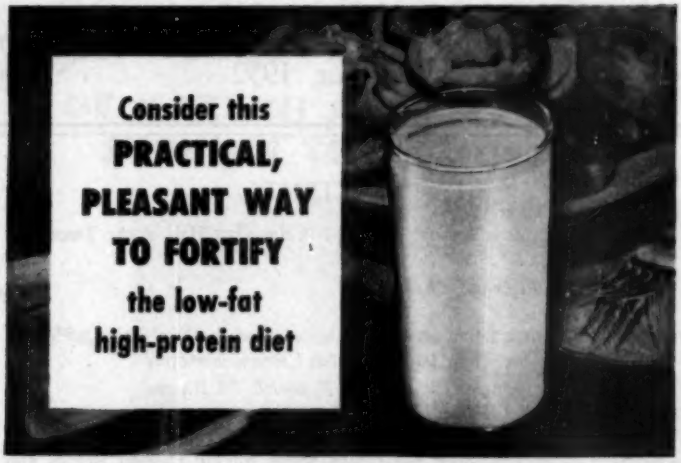

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American Journal of Public Health
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Official Monthly Publication of the American Public Health Association, Inc.

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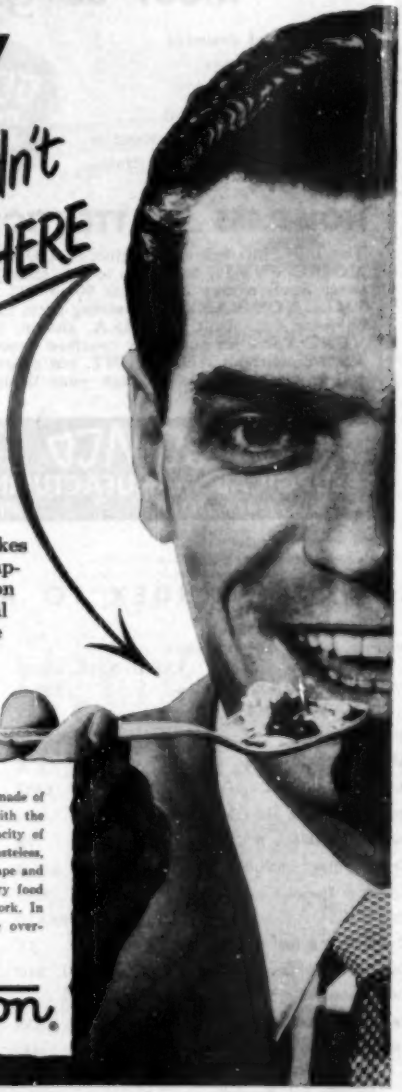
Do Careless Servers Ignore Sanitary Requirements?

It couldn't happen HERE



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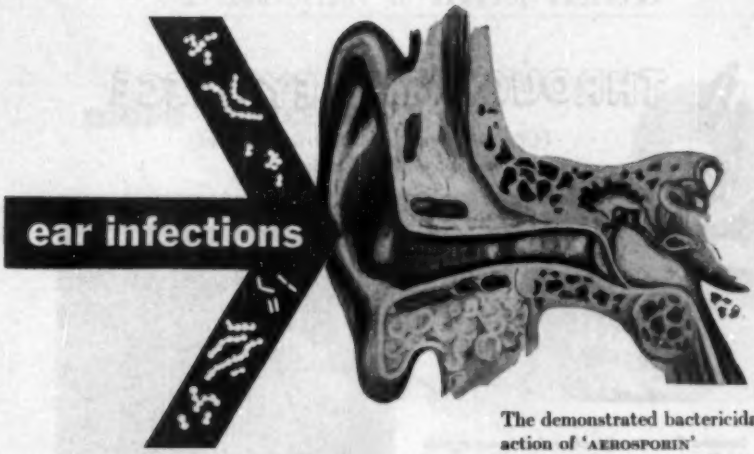

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2. Hayes, M.B. and Hall, C.F.: The Management of Otogenic Infection, Tr. Am. Acad. Ophth. *51*:140, 1947.
3. Senterin, B.H.: Diffuse External Otitis: Its Pathology and Treatment, Tr. Am. Acad. Ophth. *51*:147, 1930.

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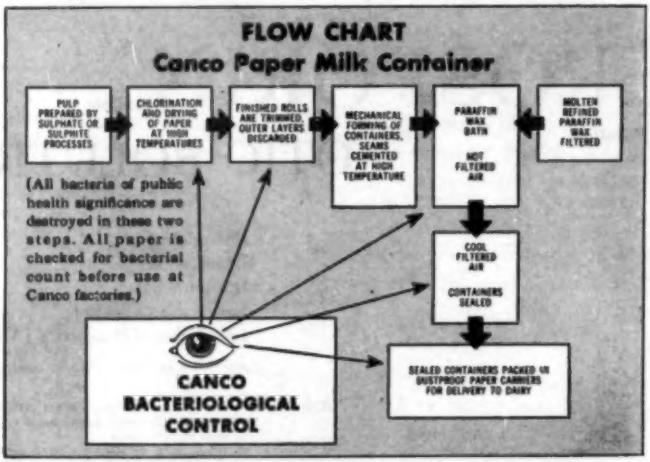
(1) *The Journal of the Texas Public Health Association, 2-50*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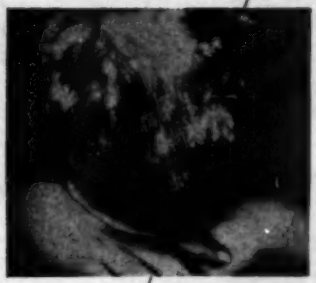

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1. Strittler, C.; Fishman, I. M., and Laurens, S.: *Transactions New York Acad. Sc.*, 12:81, Nov., 1949.

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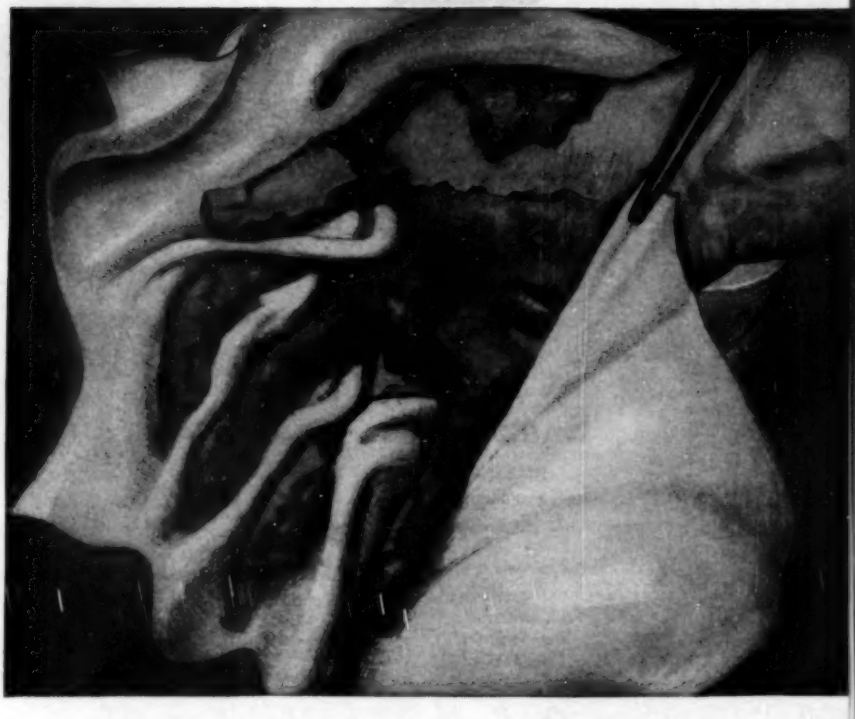

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2. *Prevents infection*—Water absorbent ointment releases aureomycin suppressing growth of susceptible organisms already present and controlling spread of possible subsequent contamination.

3. *Non-adherent and non-macerating*—Minimizes abrasion of healing wounds and avoids trapping of moisture conducive to bacterial growth.

4. *Promotes healing*—It does not interfere with healing, as do many chemical antiseptics. Where infection is controlled, healing is faster.

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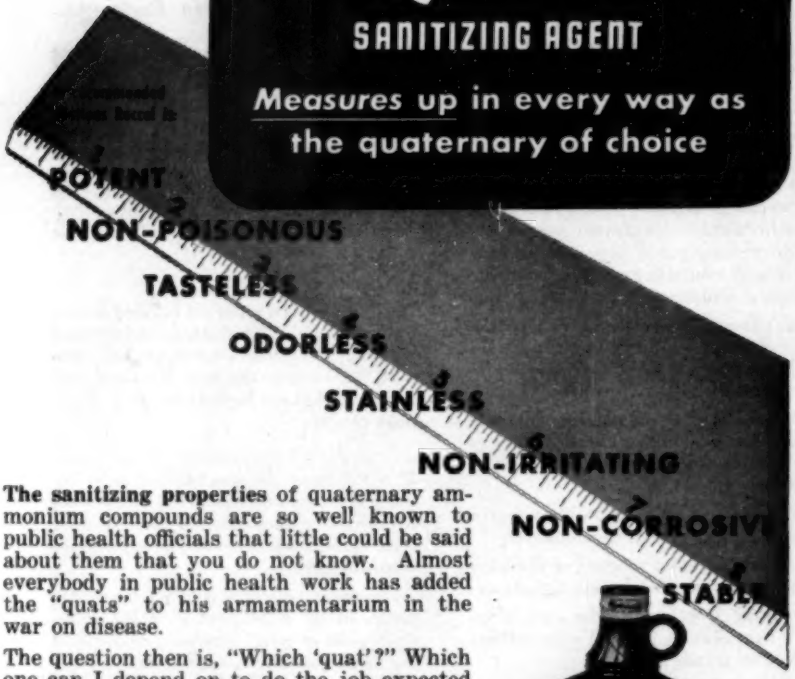

The sanitizing properties of quaternary ammonium compounds are so well known to public health officials that little could be said about them that you do not know. Almost everybody in public health work has added the "quats" to his armamentarium in the war on disease.

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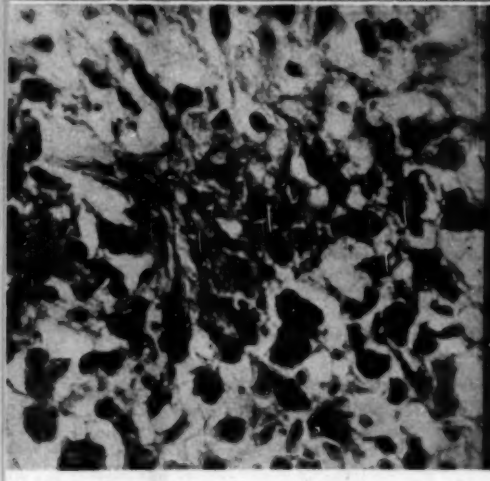
response in rheumatic fever

q. Does cortisone influence the heart lesions of rheumatic fever?

a. Early cortisone administration suppresses and in some cases may even prevent serious cardiac damage.



q. What effect does cortisone have on acute rheumatic fever?

a. Often within 24 hours after cortisone therapy, the severely ill, toxic patient appears alert and comfortable; and within one to four days, temperature drops to normal, appetite increases, and polyarthritis subsides.

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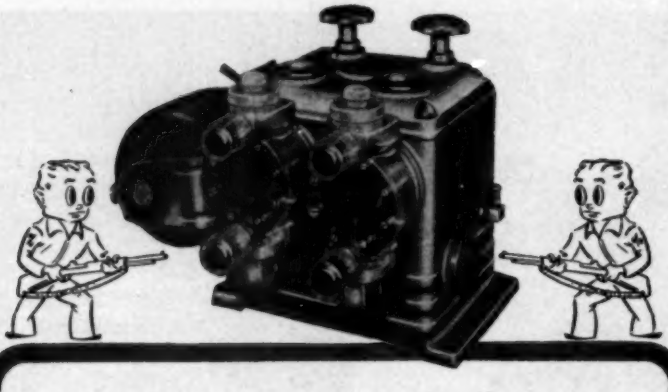

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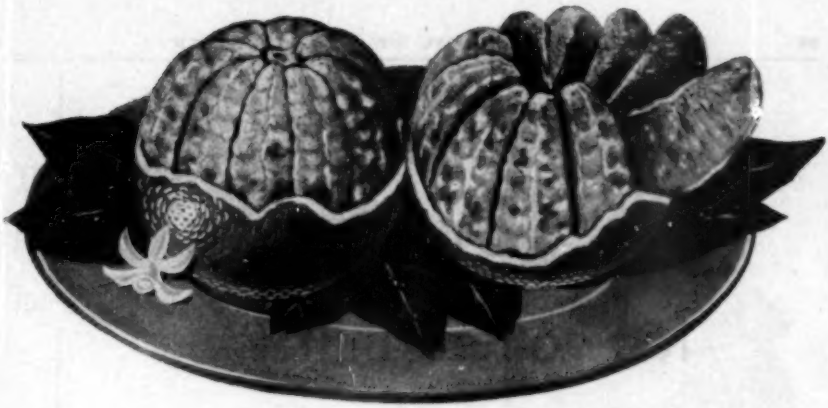

An Orange a Day for Better Nutrient Absorption

THE SIGNIFICANCE OF THE PROTOPECTINS

Human nutrition today means more than the mere ingestion of the chemical components of foodstuffs. While these nutrients—vitamins, minerals, proteins, fats, and carbohydrates—are needed to carry on metabolic life, food must also provide other substances required for normal functioning of many systems within the organism, particularly the gastrointestinal tract. Conversely, only in the optimally functioning digestive tract will released nutrients be absorbed to the greatest possible extent.

The Protopectins

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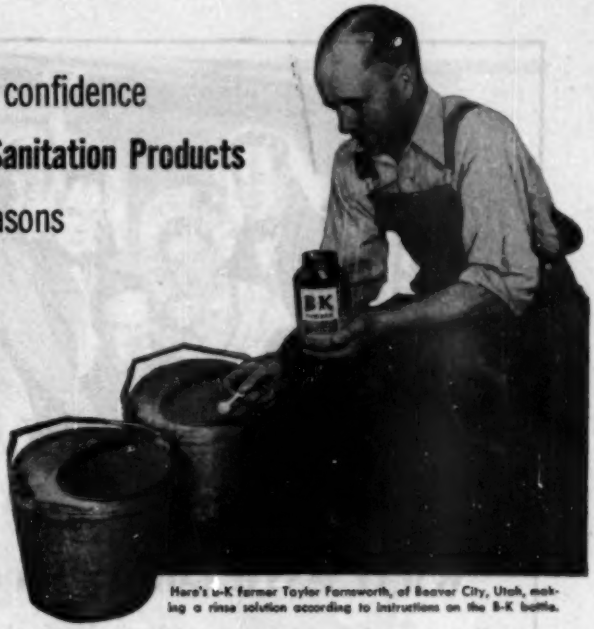

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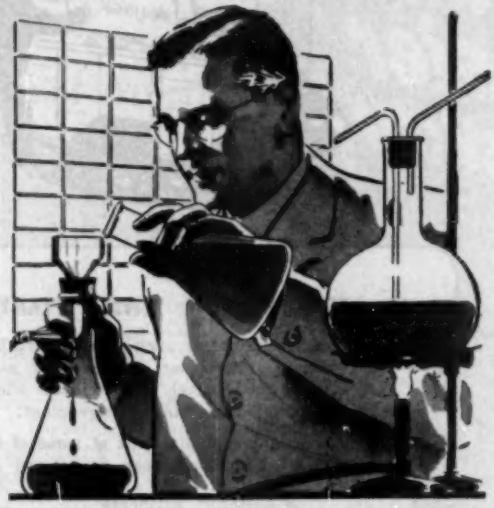

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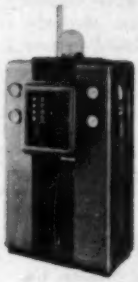

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Progress of American Industrial Medicine in the First Half of the Twentieth Century*

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AT the dawn of the 20th century, American industrial medicine was in its embryonic stage. Only a few hazardous occupations, all due to necessity and location, such as railroading, mining, and lumbering, employed physicians, primarily for the care of traumatic injuries resulting from accidents.

Some of these early American pioneer physicians were real humanitarians and progressive investigators who recognized the inadequate medical service provided, the abuses, the lack of compensation claims, the bad working conditions, and unsanitary environment. Due to their efforts and with the aid of public-spirited laymen they resorted to publicity with the design of having these evils corrected. As a result of these measures, preventive medicine, public health, sanitation, safety, health education, and workmen's compensation laws became integrated with modern curative medicine, all of which culminated in the specialty of industrial medicine.

During the interim medical education made tremendous advances, largely due to Pasteur's and Koch's discoveries of the etiology of infectious diseases being due to organisms—this knowledge contributing to the advance of modern surgery, public health, and preventive medicine. Synthetic and biochemistry progressed at such an amazing pace that the chemical age was developed almost simultaneously. The physical sciences, through the medium of research, developed mechanical engineering, utilizing electrical energy for power, illumination, and communication. Thus began a new era—the "American Industrial Renaissance"—which stimulated research, invention, and developed new trades and technologies in every field of endeavor.

The American pioneer industrial physicians profited from the discovery and publications of European physicians, scientists, and sociologists whose contributions were largely in the field of occupational medicine, especially during the 19th century when the

* Presented before the Industrial Hygiene Sections of the Western Branch and the American Public Health Association at the Seventy-ninth Annual Meeting at San Francisco, Calif., October 29, 1951.

machine age followed Watt's discovery of the steam engine.

Historically, England, as the outcome of the industrial revolution, founded modern public health and industrial hygiene. She created laws for the working people, many of which were adopted into state laws in the United States. We are indebted to that country which produced George Baker, James Lind, Percival Potts, Humphrey Davy, C. T. Thackrah, Florence Nightingale, *et al.*

France gave the world Pasteur, Rayer, Davaine, Tanqueral des Planches, Merat, and the Curies.

Germany before World War I was preëminent in the fields of chemistry, pathology, and technology. She gave the world two immortals: Robert Koch and Wilhelm Konrad Röntgen.

Italy, distinguished in somatic medicine, revealed to the world the science of human anatomy—Bernardini Ramazzini, father of industrial medicine; Dubini, discoverer of the hookworm, and Luigi Devoto, founder of the first occupational clinic.

Other countries made discoveries of great importance to which American industrial medicine recognizes and justly pays tribute.

The inspiration that gave impetus to the United States, ultimately to become the leading technological country in the world, was the development of the Bessemer process in steel manufacturing, so essential for mechanical fabrication. The invention of the internal combustion gas engine applied to transportation made possible the creation of the automobile and airplane. America was geographically fortunate in possessing vast supplies of raw material, such as oil, metals, forest, and farm products. Our universities and technical schools trained and furnished skilled engineers, technicians, inventors, and business executives who developed the major and minor engineering technics necessary to build the modern automobile. In turn, this meant expansion into hundreds of industries to supply the accessories necessary to produce and operate the automobile, such as rubber tires, batteries, electric motors, lighting, enamels, and other gadgets for the safety and comfort of motorists. The automobile industry—including as it does small business ventures, such as garages, gas stations, parking facilities, motels, and thousands of miles of road construction, and improvements in town planning—provides employment for millions of our population.

In the manufacture of the raw materials and in the fabrication of the automobile alone many occupational diseases resulted, viz., heat exhaustion, asphyxiation by gases, burns, traumatism, pneumoconiosis, and the ever-increasing metallic and solvent toxemias. The oil industry, from the well to the refinery, produces thousands of by-products, such as petrol, paraffin, oils, solvents, greases, dyes, pigments, insecticides, and pharmaceuticals. All of these are potentially toxic and some are carcinogenic; all affect the physiology of man and require the constant devotion of advanced clinical knowledge, engineering, chemical laboratory research, etc.

Thus, the chemical and physical factors causing occupational diseases and traumatism, and displaying the same symptoms as are observed in infectious diseases, had to be differentiated, diagnosed, and prevented by epidemiological procedures. The physician engaged in the plant recognizes the earliest signs of morbidity while it is curable and so prevents advanced pathology with all the consequences it entails. The fine training involved in the recognition of these symptoms and of the industrial hazards encountered has produced a new medical specialty in which curative and preventive medicine are unified—that is, industrial medicine and the modern industrial physician.

The writer of this article was persuaded, after 52 years of practice as an industrial physician and a university professor in occupational hygiene, to make a chronological review from his own experience and observations on the advancement in this important field of medicine. During the two decades prior to 1900 there were only 22 contributions made to this literature by American authors, and those that were obtainable were more or less on sociological problems devoted to the subject of the economic losses and wastes in industry arising from poor health conditions, environmental working conditions, lack of sanitation, safety, compensation laws, and especially the absence of humanizing elements of industry. Yet, it was these early publications that promoted investigations which brought about corrective legislation and stimulated interest in public health, preventive medicine, safety, and the application of the newer developments in curative medicine and surgery. There were no journals or societies devoted to industrial medicine. Osler's textbook on medicine listed two occupational diseases: lead and arsenical poisoning. One could count on the fingers of one hand the number of books published on hygiene and sanitation. The great railroads were the first to operate hospitals for their sick and injured employees. It was the staffs of these hospitals who organized the American Association of Railroad Surgeons, at whose annual meetings were discussed the problems of traumatic surgery, safety, and sanitation.

FIRST DECADE—1900 TO 1910

The old maxim that necessity is the mother of invention held good in this early period when practitioners of general medicine were seeking the truth by means of survey, clinical observation, and research in the cause of an occupational health program, namely for the prevention of diseases and accidents and for the development of other sociological methods to improve working conditions and compensation laws.

The author introduced graduate nursing into the lumber industry. He trained and organized first aids in camps and mills; built a modern surgical hospital for major surgery; introduced the first x-ray coil, and published the first paper on abdominal injuries resulting from lumbering hazards. C.-E. A. Winslow gave the first instruction at the Massachusetts Institute of Technology in industrial hygiene.

In the field of occupational diseases caused by exposure to chemicals, George de Schweinitz, a Philadelphia ophthalmologist, observed that wood alcohol caused amblyopia. He later described laryngeal palsy due to lead intoxication. George E. Ebright of California at the Hercules Powder Works observed the "ether jags" resulting from making smokeless powder.

The most important event in the history of American industrial medicine at the close of the first decade was the report of the Wainwright Commission of New York. The report showed that only one out of every eight injured men was awarded compensation, and only 36.4 per cent of these were premiums. The balance of the funds were expended on claims adjusters, legal advice, and commissions. Recognition of this shocking condition was instrumental in the passage in 1910 of the first workingman's compensation law in the State of New York.

Prior to the passage of this law there were three common law defenses: contributory negligence, the fellow-servant clause, and the assumption of risk. The change from the doctrine of the employer's liability to the principles of workingman's compensation regardless of fault was not an *evolution* but a *revolution*. The economic burden of the injury is shifted from the individual to

employment and to society by charging it to the cost of production.

American industrial medicine at this period pays tribute to some of the pioneers who have unselfishly through their labors and investigations added prestige and progress: G. F. L. Doehring, R. T. Legge, G. M. Kober, George Price, William Hanson, C.-E. A. Winslow, E. R. Hayhurst, Alice Hamilton, F. L. Hoffman, J. B. Andrews, Harry Mock, F. S. Lee, *et al.*

SECOND DECADE—1910 TO 1920

This decade opened up like spring. The physical sciences of electricity and engineering, together with synthetic chemistry, developed new processes and discoveries, and one out of every five of these developed hazards that produced morbidity and mortality. The top early investigators were humanitarians learned in their special sciences; they by their surveys and published reports made history in industrial hygiene. These were: Dr. John B. Andrews of the American Association of Labor Legislation who published his conference on industrial diseases and secured a Congressional law to abolish the phosphorous match, thereby preventing any more cases of phossy jaw; Dr. George M. Kober, distinguished professor of hygiene, author and leader in preventive medicine and industrial hygiene, made his contributions for social betterment; Dr. Alice Hamilton, a real explorer of the dangerous trades, a sociologist, toxicologist, and teacher, emminent in industrial health; Dr. Emery R. Hayhurst, illustrious research contributor, author, and organizer in occupational health. Their great efforts paved the way for others to follow.

In 1912, Dr. G. M. Kober presided at the Fifteenth International Congress on Hygiene and Demography held in Washington. In the section devoted to the hygiene of occupation there were 64 contributions by experts, covering all phases of the subject. At this meeting was laid the foundation for a scientific literature in American industrial medicine.

Two years later the American Public Health Association instituted a section on Industrial Hygiene at the Jacksonville, Fla., meeting. A special symposium of four papers on industrial hygiene was presented by Drs. Kober, E. R. Hayhurst, John B. Andrews, and C. T. Graham Rogers. At this same meeting 16 other papers offered by prominent persons were read and discussed. There the American Public Health Association committees served to advance the foremost researches on anthrax and benzol.

The dusty trades hazard is one of the most important causes of industrial morbidity and mortality, especially in the case of breathing air containing silica (SiO_2) producing silicosis—a lung disease characterized anatomically by generalized fibrotic changes, development of nodulation in the parenchyma of both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, coughing, unaccompanied by fever, increased susceptibility to tuberculosis, and by characteristic x-ray findings. We owe much credit to the Miners Phthisis Commission at Johannesburg, South Africa, for their monumental researches, including physical, chemical, roentgen, and autopsy findings. They demonstrated that from 0.5 to 5μ particles gain access to the lung structure through the endothelial cells lining the air vesicles. It is these cells that engulf the particles which are carried into the lymph channels where they become encapsulated and ultimately fibrossed in the lung structure.

This work inspired American investigators who added by their researches to the literature important knowledge on silicosis and other forms of pneumoconiosis. These were: A. J. Lanza and S.

B. Childs, C.-E. A. Winslow and L. Greenburg, LeRoy U. Gardner, R. T. Legge, and Esther Rosencrantz, and many others. The studies by these investigators on the dusty trades led to means of dust prevention by the mechanical exhausts, the wet processes, the electric dust collectors, the impingers, and the konimeters for estimating dust particles in atmospheres.

Probably the most ancient industry is mining and the hazards have always been tremendous in this line of work. The U. S. Bureau of Mines developed important chemical tests, detectors, and methods of analyzing mine gases, as well as using the geophone to locate entombed miners, improving the technics of artificial resuscitation using oxygen and CO_2, gas masks, and training teams for mine rescue operations.

During World War I, from 1914 to 1918, some of the following researches were developed by and later used in industrial medicine:

Carrel-Dakin treatment of wounds with dichloramine T
Organization; methods for poisonous gas defense
Geophone to detect sappers underground
U. S. Army organized and promoted aviation medicine
American Commission investigated trench fever
Preventive inoculation against tetanus in gunshot wounds
Inoculation against typhoid fever in the Army and Navy
Rehabilitation for war cripples
Encephalitis recognized as a complication in pandemic influenza
Fatigue studies and researches in efficiency

The National Safety Council was organized to promote safety devices, accident prevention, careful statistics, surveys, and safety education. This was monumental pioneering in successfully exploring the cause and prevention of accidents.

The American College of Surgeons, Committee on Industrial Medicine and Traumatic Surgery, adopted the minimum standard for medical service in industry, especially in the care of fractures, and later established a system of certification for industrial plants that met their requirements of standardization. This national association has had much influence on modern industrial surgery.

The most significant impetus to American industrial medicine, in fact, a crowning event, was the organization of the American Association of Industrial Physicians and Surgeons, the purpose of which was to elevate the standards of industrial medical practice; develop a code of ethics; promote industrial hygiene education and research, preventive medicine and safety, and to hold annual meetings for the advancement of industrial medicine.

During this decade the U. S. Government created the Bureau of Mines and a Division of Industrial Hygiene in the U. S. Public Health Service. Courses of instruction in industrial health in our universities and occupational clinics were established. Harvard University was the first institution to offer a course of instruction leading to a degree in industrial hygiene. The first professional periodical, *The Journal of Industrial Hygiene*, appeared. Statistics in industrial mortality and Louis I. Dublin's *Causes of Death by Occupations* were published. Surveys of fatigue and efficiency were made and a safety code for lighting factories developed. Commissions were appointed for investigation of ventilation, noise, and industrial wastes.

THIRD DECADE—1920 TO 1930

At the end of the second decade a new era was ushered in, especially in lead poisoning, the first ancient occupa-

tional disease. Previously, the published works of Tanqueral, the great French investigator, contained all that was known about the subject before him and in the 19th century as well.

Dr. Alice Hamilton, America's first distinguished woman physician, sociologist, toxicologist, and investigator in occupational diseases, earned honor and distinction by her researches into the problems of lead poisoning. Through her devoted and tireless surveys and researches in the principal lead industries she laid down the principles of preventive medicine as applied to industry. Her governmental surveys in the white lead, pottery, and printing trades are classic monographs which inspired the beginning of many reforms, including changes in the manufacture of lead products to protect the workers, and the introduction of medical examinations and compensation legislation. It was through her efforts that a manufacturer of white lead was induced to endow a research project at Harvard University on the action of lead in the human body. This made possible the distinguished studies of lead poisoning by Dr. Jacob Aub and his colleagues. Dr. Hamilton became the first woman professor at Harvard University and an author of a number of distinguished books and monographs in the field of industrial hygiene.

The lead poisoning researches at Harvard University regarding the manner in which lead is absorbed, transported, excreted, and stored in the body were brought to light through the scientific research conducted by Dr. Jacob C. Aub and his colleagues, L. T. Fairchild, A. S. Minot, and Paul Reznikoff. These investigators conclusively proved that lead entering the respiratory tract produces an effect more rapidly and severely than when it enters the gastrointestinal tract. They have also shown in a summary of the behavior of lead compounds from a physicochemical standpoint, that the products of the reaction between secondary sodium phosphate and a lead salt are tertiary lead phosphate and acid. This lead salt is very stable at normal hydrogen ion concentration of the body but sensitive to slight changes in acidity, passing into a more soluble di-lead readily. It is well known that the marked solubility of lead or its oxide, as in blood plasma, may account for the high incidence of plumbism after exposure to lead fumes or dust.

It was these same authorities who explained that lead was transported in the blood stream as colloidal lead phosphate and deposited in the bones as tertiary lead phosphate. These researches offer methods of deleading in the therapy of lead poisoning and the adoption of standards of safety in work shops to lead exposure limits, such as 1.5 mg. per 10 meters of air.

These were followed later by the brilliant researches of Robert H. Kehoe of the University of Cincinnati, one of the most distinguished American investigators in the field of lead diseases, famed for his painstaking laboratory researches in the physiology and toxicology of lead absorption and lead poisoning — the two manifestations which he *clearly* differentiated. The evidence of occupational lead absorption is possible to determine by the environmental degree of the hazard, of a survey of materials, and the activities of an industrial plant by estimating the lead content of the atmosphere of work spaces. Thus, the physiological evidences of lead absorption above the *normal* level can be clearly understood. This is a very important factor in industrial hygiene, general medicine, and medicolegal practice.

The earliest sign of lead absorption is specific for lead alone and is found in an increased rate of urinary lead secretions. The urine test is the most preeminent diagnostic method. According

to Kehoe lead is found normally in urine in quantities varying from 0.03 mg. to 0.08 mg. per liter of urine, with a mean concentration slightly in excess of 0.03 mg., and in the blood normally 0.03 mg. per 100 gr. This proves that a healthy American ingests normally with his food and drink a certain amount of lead which is eliminated by the alimentary canal and kidneys, and it is only when exposed to higher concentrations that the lead excretions increase. To summarize his brilliant researches it became imperative to differentiate harmless lead absorption from lead intoxication. The latter is based upon a lasting or significant lead exposure, the presence of an illness, consistent with known clinical manifestations, and certain corroborative laboratory findings.

Among other American researchers in the field of plumbism to whom credit is due for their contributions are: Carey P. McCord, May R. Mayers, Emery R. Hayhurst, Elsten L. Belknap, W. C. Dressen, and the APHA Committee on Occupational Lead Exposure and Intoxication.

FOURTH AND FIFTH DECADES— 1930 TO 1950

The score of years that followed from 1930 to 1950 registered continued progress and expansion in new fields of research and in legislative regulations introduced to protect the health and safety of employees. State medical societies organized medical care plans for group insurance; the federal government, in an endeavor to evaluate problems of industrial health, developed formulae and statistics to determine morbidity and mortality rates, classification of hazards, and compensation insurance. Credit is awarded for these important data contributed by the National Health Survey, the Census Bureau, W. M. Gafafer, Louis I. Dublin, C. O. Sappington, and J. J. Bloomfield.

The American Medical Association, after long consideration, finally instituted the Council of Industrial Health in 1937. Its purpose was to coördinate problems in medical practice and industrial health. It now sponsors an excellent annual congress. Its membership is selected from the foremost men in industrial medicine who have made distinguished contributions in practice, research, and education. It publishes the *Archives of Industrial Hygiene and Occupational Medicine*.

Many national and state organizations which have direct association with industrial health have been created. These include the National Organization for Public Health Nursing, with an industrial nurses' section; Industrial Hygiene Foundation; National Defense Council; United Mine Workers of America Welfare and Retirement Fund which provides for paraplegic miners. The U. S. Public Health Service established a Division of Industrial Hygiene. Among other groups organized during this period were: The American Industrial Hygiene Association, the American Association of Industrial Dentists, and the American Association of Industrial Nurses. All of these organizations have improved the standards of practice, and have made valuable contributions to industrial health.

Some of the distinguished researches contributed during this epoch were the investigation as to the causes of some 20 deaths among watch dial painters in New Jersey. The responsible agent was a radium paint. The U. S. Public Health Service outlined methods of control. There were extensive studies of beryllium intoxication as to symptoms, pathology, and therapy. Important researches are being continued in air pollution, especially in industrial cities, in regard to the cause of the agents producing so-called "smogs." The carcinogenic agent that produces cancer, found in soot, tars, paraffin, aniline,

and mineral oil has been incriminated and isolated by Dr. George Gehrmann of the E. I. du Pont de Nemours Company laboratories as beta-naphthylamine. By means of physiological research the problems of prevention and treatment of heat stroke and exhaustion have been solved by the introduction of salt and glucose by Shoudy and R. Schofield.

With the advent of World War II, American and British scientists sought by extensive researches to develop an antidote for Lewisite, a deadly arsenical war gas. The British discovered the secret in B.A.L. For delousing, DDT became the answer. The sulfa drugs and antibiotics were developed. The atomic bomb and radio isotopes were produced. Use of plasma for shock and researches in the therapy of burns have advanced. Marked advancements have been made in surgery and prosthesis for amputees in war and industry. Astonishing results in modern rehabilitation have been made by H. H. Kessler and H. A. Rusk, and through preplacement examinations to determine a man's capacities, and by job analysis to supply jobs for the handicapped through the work and researches of Kuh and Hanman.

The historical review of a half-century of American industrial medicine as witnessed by the writer presents a cross-index of the principal accomplishments that produced the specialty of industrial medicine and hygiene and developed three other professions: the industrial dentist, hygienist, and nurse. All fit in an ethical team by coöperation in the interest of the health and welfare of the American worker.

What is in store for industrial medicine in the next fifty years?

With the constant developments and new discoveries in synthetic and physical chemistry, our profession must be constantly alert to solve and combat by substitution other toxic substances as we did in the past.

The atomic age is now upon us—a new era in radioactive elements. The toxic effects on the physiology of man are to be studied and combated by preventive measures. This is industrial medicine's challenge for tomorrow—and it will not be found wanting.

Occupational Medicine Series

Columbia University School of Public Health announces a series of one-hour lectures on Occupational Medicine to be given on 13 consecutive Saturday mornings beginning on September 20, 1952. The lecturers will be members of the staff of the Division of Occupational Medicine of the School. Interested members of the medical and allied professions are invited to attend. There will be no formal registration and no tuition fee. Nine a.m. in Amphitheater A, College of Physicians and Surgeons, 630 W. 168th St., New York 32.

Prevalence of Pleuropneumonia-like Organisms and the Evaluation of Media and Methods for Their Isolation from Clinical Material*

HARRY E. MORTON, Sc.D., F.A.P.H.A., PAUL F. SMITH, PH.D.,†‡ AND ROBERT KELLER, M.S.

Department of Microbiology, School of Medicine, University of Pennsylvania; and the Institute for the Study of Venereal Diseases, with the U. S. Public Health Service coöperating, University of Pennsylvania, Philadelphia, Pa.

PLEUROPNEUMONIA-LIKE organisms have been isolated from various species of animals with which man is frequently associated, as well as from various pathological conditions in man, during the past 15 years. From the accumulating evidence which gives a public health aspect to the pleuropneumonia-like organisms it appears timely and important to summarize the reports on the prevalence of these organisms and to evaluate the media and methods for their isolation from clinical material.

The causative agent of bovine pleuropneumonia was cultivated by Nocard, Roux, Borrel, Salimbeni, and Dujardin-Beaumetz in 1898 [44] and studied by Bordet [1] and by Borrel, Dujardin-Beaumetz, Jeantet and Jouan in 1910.[2] This highly contagious disease of cattle has been recognized in Europe for over 200 years and at present is distributed throughout the world except in North America, Western Europe, and India. It appeared in the United States in the middle of the last century but was finally eradicated. Introduction of the organism of bovine pleuropneumonia into the United States is prohibited by law. Organisms resembling the descriptions of the bovine pleuropneumonia organism but isolated relatively recently from sources other than bovines have been designated pleuropneumonia-like organisms, or PPLO. Their peculiar colony form is often designated as the L type colony.

Bridre and Donatien [3] in 1925 isolated from sheep and goats the causative agent of contagious agalactia, which bore close morphological and biological resemblances to the organism of bovine pleuropneumonia. Contagious agalactia is found predominantly in Europe and Algeria. It may be chronic or acute. It involves the joints, the eyes, and, in lactating sheep and goats, the mammary glands.

In 1934 Shoetensack [57] obtained on solid culture medium a pure culture of a "filterable virus" from nasal secretions and lung and liver suspensions in many cases of typical respiratory type of distemper in dogs. The "virus" resembled very much the causative agent of bovine pleuropneumonia in morphology and staining properties, but it was more difficult to grow on an artificial medium.

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 2, 1951.

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‡ Merck & Company, Inc., Rahway, N. J.

Of greater importance, however, than discovering these organisms in dogs is the manner in which the organisms could be isolated. Purulent secretions from the nose and eyes of a dog shortly before dying with distemper were mixed with broth, incubated three hours, mixed with one-tenth of its volume of horse serum and filtered through a Berkefeld N candle. The filtrate was distributed into small tubes, incubated two to four days and then transferred to M.P. blood agar slants. After four to seven days incubation part of the culture near the water of condensation was transferred to fresh slants of the same medium and the process repeated for two to five generations. Growth of the "virus" was usually seen after the third or fourth generation in both aerobic and anerobic cultivations. This blind passage cultivation of the filtrate is the same procedure described by Hauduroy[24] in 1927 for culturing the invisible forms of visible microörganisms. It was this technic which Hadley, Delves, and Klimek[22] employed in demonstrating a filterable form or the G type culture of Shiga's dysentery bacillus. It was also employed by Duff[14] for demonstrating the G type culture for *Bacillus salmonicida*, by Haddow[20] for demonstrating the G form of *Bacillus paratyphosus B*, and by Morton[32] for demonstrating the G form of *Corynebacterium diphtheriae*. Edward and Fitzgerald[16] cultured PPLO from the throat specimens of 29 (74.4 per cent) of 39 dogs. It is interesting to note that Dienes[6] in 1939 isolated a *Flavobacterium* and L type colonies from the dog bite wound of a patient. Edward and Fitzgerald also found the vaginal swabs of 21 (54 per cent) of the 39 dogs were positive. PPLO were found in the semen of a dog being investigated for sterility and epididymitis, in the vaginal swab from a bitch artificially inseminated with semen from the dog, and from the semen of a dog mated with the bitch after the attempt at artificial insemination. The authors suspected that they were dealing with PPLO which were pathogenic for the canine genital tract.

Not all of the early isolations of PPLO were directly from animal sources. Laidlaw and Elford[29] isolated PPLO from all samples of raw sewage examined from four London districts during the summertime. They were not detected in London tap water or in fecal material from man, pig, rabbit, or rat. Filtration experiments showed the average diameter of the smallest phase of the organisms to be about 125 to 175 mμ but larger forms up to 0.5 μ in diameter were also present. In this respect the organisms resembled the organisms of bovine pleuropneumonia and agalactia and differed from viruses and bacteriophage which are relatively uniform in size. The authors considered the organisms as possibly representing a connecting link between bacteria and viruses. Seiffert[55] cultured PPLO from soil, decomposing leaves, compost, and manure in Germany. Microscopically he observed structures resembling PPLO in saliva and sputum and these suspicious bodies were present in large numbers in specimens from persons with bronchiectasis. Seiffert[56] was the first to call attention to the similarity between the small bodies of the organisms which he had isolated and the C form of bacteria described by Kuhn and Sternberg,[28] also, to the slight similarity between the large bodies of his organisms and Pettenkofer bodies described by the same authors. Hadley[21] pointed out that there appears to be a definite relationship between the C and G forms of bacteria. There may be some relationship between PPLO and L forms on the one hand and certain culture phases or filterable forms of bacteria on the other.

Klieneberger and Steabben[27] isolated PPLO from the lungs of rats exhibiting chronic bronchopneumonia or bronchiectasis. Findlay, *et al.*[18] described

PPLO as the causative agent of polyarthritis in rats. In the acute stage of the infection the organisms could be isolated from the heart's blood, popliteal lymph-nodes and spleens of the rats. It was possible for the organisms to remain latent in the brains of rats for at least 21 days. Nelson [41] isolated coccobacilliform bodies from albino rats with infectious catarrh. When tissue cultures of the organisms were instilled intranasally into rats, pneumonia (5 per cent), otitis media (62 per cent), and rhinitis (71 per cent) resulted. The catarrhal syndrome was communicable by direct contact, but persistent rhinitis might be a prerequisite. He [42] concluded that the coccobacilliform bodies isolated from rats were so similar to PPLO that there is little reason for separating the two. One species of PPLO appears to be characterized by possessing pyogenic properties for rats.[61, 25]

In 1935 Nelson [37] described the association of coccobacilliform bodies with an infectious fowl coryza. Gibbs [19] also described a causative agent associated with outbreaks of coryza in chickens. The estimated sizes of the causative agents were of the same magnitude. Later, Nelson [38] found that the coryza was of longer incubation period than that caused by *Hemophilus gallinarum*, and that it could be transmitted by direct contact.[39] As with the coccobacilliform bodies from rats, Nelson [42] concluded that these coccobacilliform bodies from fowl coryza of slow onset were so similar to PPLO that there is little reason for separating the two. Van Herick and Eaton [60] isolated a strain of PPLO during the passage of strains of virus of primary atypical pneumonia amniotically in developing chick embryos. Specific antibodies were found in a high percentage of sera from hens at the hatchery which furnished the eggs from which the organism was isolated.

In carrying out brain to brain transfer of toxoplasma in mice, Sabin [45] in 1938 encountered a "neurolytic" agent distinct from the toxoplasma. This agent was subsequently proved to be PPLO.[49] In the same year Findlay, *et al.*[17] in England isolated a strain of PPLO designated as L5 from mouse brain during the intracerebral passage of the virus of lymphocytic choriomeningitis. Some of the mice exhibited the rolling symptoms which had been observed years earlier during the intracerebral passage in mice of the neurotropic yellow fever virus. Findlay, *et al.* found their strain of PPLO closely related to, if not identical with, two strains received from Sabin. Sabin [49] obtained a pure culture of PPLO from the brain of a one-month old mouse, and this strain produced a progressive, proliferative polyarthritis upon injection into mice.[50] A high percentage of normal mice were found to carry PPLO on the external surfaces of their eyes.[51] Nelson [40] in 1937 described an infectious catarrh in mice as being due to coccobacilliform bodies. Recently, he [42] stated that the coccobacilliform bodies and PPLO are so similar that there is little reason for separating them. Nelson [43] in 1950 described a special strain of PPLO which caused a conjunctivitis in mice without involving the respiratory tract.

With PPLO present so frequently in man's environment it is not surprising that the organisms are frequently found in man either normally or associated with pathological conditions. The first known cultivation of PPLO from man is the work of Gey [19a] who succeeded around 1935 in isolating several dozen lines from human placental cord blood. The isolations were made in Brewer's thioglycollate medium enriched with the placental cord blood in question. The cord blood may have been contaminated with the cervical or vaginal flora because when the placental blood was collected very carefully, no organisms of any kind were encountered. The first report of

isolating PPLO from lesions in man was that of Dienes and Edsall in 1937.[9] They isolated the organisms in pure culture from an excised suppurating Bartholin gland of a laboratory worker who came in frequent contact with rats. The patient noticed her first symptoms 10 days after marriage. Dienes, *et al.*,[10,11] reported another case in 1942 and another in 1948, two of which yielded pure cultures of PPLO.

Perhaps it is because the first isolation of PPLO from man was from the genitourinary tract that the most intensive search has been made in that region for these organisms. It may be also that there are more unsolved problems dealing with the bacteriology of the genitourinary tract or that public health bacteriologists and venereologists are more eager in their search for incriminating microörganisms. The reports to date make PPLO appear to be more prevalent in the genitourinary tract than in other regions of the body, but this prevalence may be more apparent than real, and only future work can furnish the answer. The incidence of PPLO is greater if there is some existing pathology. Klieneberger[20] isolated PPLO from 33 per cent of the vaginal cultures of 36 gynecological patients but from only 4 per cent of 45 normal pregnant women. All of 5 women with abnormal pregnancies yielded PPLO. Of 19 patients in whom *Neisseria gonorrhoeae* or *Treponema pallidum* could be demonstrated, 14 were positive for PPLO. Melen and Odeblad[31] concluded that there was a statistical significant difference in the incidence of 76 per cent positive cultures from women with inflammatory pelvic disease as compared with 19 per cent positive cultures from women with noninflammatory diseases. They reported 40 of 47 cases of vaginitis, 2 of 3 cases of cervicitis, 3 of 3 cases of endometritis, 6 of 6 cases of salpingitis, and 6 of 7 cases of urethrocystitis as positive for PPLO. Of 58 cases of acute or chronic vaginitis and cervicitis, Dienes, *et al.*[10] found PPLO present in pure culture in 6 cases, and in 17 other cases the organisms were found in greater abundance than other bacteria.

Randall, Stein and Ayres[40] isolated PPLO in pure culture from a tuboovarian abscess. The patient had received penicillin therapeutically for two days prior to draining the pus. Postoperatively the patient received both penicillin and streptomycin. Five months later, a small amount of aspirated fluid yielded a pure culture of *Bacteroides*. Since PPLO are quite susceptible to the action of streptomycin,[30] the PPLO may have disappeared under the antibiotic therapy. An interesting observation of Randall, *et al.* is that 26 per cent of 300 consecutive gynecologic patients were positive for PPLO, while only 17 per cent of the women with noninflammatory diseases were positive; and 71 per cent of the cases of leucorrhea were positive. The cervical cultures of 70 per cent of women treated with penicillin were positive for PPLO, indicating that penicillin had either suppressed the bacteria so that PPLO could be isolated more readily or that bacteria had been dissociated into the L form. Schaub and Guilbeau[54] isolated PPLO only once and then with bacteria from the postpartum uterus of 32 women who had not received penicillin, but 16 of 80 women who had received penicillin during their pregnancy gave positive cultures and in 11 instances there were pure cultures of PPLO. With the production of L forms of bacteria *in vitro* by the action of penicillin, a similar transformation *in vivo* becomes a distinct possibility.

PPLO have been reported associated with pathological conditions in the male genitourinary tract, as well. Dienes and Smith[12] reported isolating PPLO from

a total of 24 males with prostatitis. The organisms were isolated in pure culture in 5 of the cases, and in 3 cases the PPLO disappeared when the prostatitis subsided. Four of the 24 males presented the characteristic symptoms of Reiter's disease, i.e., urethritis, arthritis, and conjunctivitis. Dienes, *et al.*[10] cultured PPLO from the joint fluids of two cases of Reiter's disease and Brown, *et al.*[4] also recovered one strain of PPLO from the joint fluid of one patient with rheumatic disease. We[24] have found a higher incidence of PPLO in cases of prostatitis if there were accompanying symptoms of conjunctivitis and arthritis. Joint involvement is also common among cattle, sheep, rats, and mice infected with their varieties of PPLO.

Although Dienes[8] stated that PPLO and *N. gonorrhoeae* had never been observed together in cultures from male patients, Dienes, *et al.*[10] later reported PPLO present in two cultures from the male urethra or prostate which were also positive for *N. gonorrhoeae*, and Salaman and coworkers[53] had previously reported isolating PPLO from the urethral discharge or urine of 34 per cent of the cases of gonorrhea in men and from the cervix or urethra in 61 per cent of the cases of gonorrhea in women. In the area served during World War II by the hospital from which Salaman reported, the incidence of gonococcal urethritis was twice that of "nonspecific" urethritis. There is reason to believe that in some parts of the United States the incidence of "nonspecific" urethritis is now more than twice that of gonococcal urethritis. Infections of the genitourinary tract are not always associated with urethritis or prostatitis as Ruiter and Wentholt[47] have reported a case of fusospirochetal gangrene of the penis from which they isolated PPLO and a case of phagedenic balanitis in which PPLO were isolated in practically pure culture.

Harkness[23] has reported a total of 8 positive isolations of PPLO from anal swabs and swabs taken during sigmoidoscopy from 52 individuals. In this communication we report 3 of 24 fecal specimens positive for PPLO.

The high incidence of PPLO in the genitourinary tract of both men and women naturally raises the question of communicability. As mentioned previously the first isolation of PPLO from a human being was from an abscessed Bartholin's gland 10 days after the patient's marriage. Dienes and Smith[11] reported a case in which an 18-year old girl developed acute vaginitis 4 days after intercourse and abundant growth of PPLO was obtained from the discharge. These authors also reported two instances involving husbands and wives in which there was the possibility of transmission of PPLO by intercourse. Morton, Smith and Leberman[34] also reported two instances in which PPLO were isolated from both husband and wife. Again, we can with profit turn to the work with animals. Edward[15] working with cattle isolated PPLO from bull semen at a place where there were breeding troubles in a herd. When the PPLO isolated from the bull semen were inoculated into the uterus of a healthy maiden heifer at estrus, an inflammation of the genital tract resulted. Edward and Fitzgerald isolated PPLO from the semen of an infertile dog, from the female dog mated with it, and from the second stud dog apparently infected by subsequent mating with the infected bitch.

Seiffert[55] observed microscopically structures resembling PPLO in saliva and sputum, especially from persons with bronchiectasis. Smith and Morton[50] found PPLO in the throat cultures of approximately 33 per cent of individuals, and Morton, Smith, Williams and Eickenberg[36] found the organisms present in saliva cultures of about 45 per cent of individuals. In this

connection two other reports are of special interest. Paine, *et al.*[45] reported isolating an alpha streptococcus and PPLO from a brain abscess in an individual who had the stem of a smoking pipe thrust into the brain during an altercation. Carlson, *et al.*[5] reported culturing PPLO from the blood of a child who gave a history of a human bite. These workers also isolated PPLO from the blood and spinal fluid cultures from another child who at autopsy was found to have a brain abscess. They failed to find PPLO in 200 routine blood cultures, and we have failed to find them in the blood of over 100 normal healthy medical students.

The production of PPLO or L variants from bacteria *in vitro* cannot be denied. It is easier to produce these variants from strains of bacteria recently isolated from the body than from laboratory strains. In most instances their production has been under the influence of penicillin. To date these variants have been produced for species of bacteria representing 12 genera, namely, *Bacillus*, *Bacteroides*, *Clostridium*, *Escherichia*, *Hemophilus*, *Neisseria*, *Pasteurella*, *Proteus*, *Salmonella*, *Shigella*, *Streptobacillus*, and *Vibrio*. This aspect of PPLO has been summarized in the review by Dienes and Weinberger.[18] In chemo- and antibiotic-therapy it is important to destroy the infecting agent not only in the form in which it exists during the acute infectious process but also any variant forms which the infectious agent may assume.

Since PPLO occur so commonly in man's environment and are being isolated from man more and more frequently and under conditions which warrant intensification of the search for them, it is important and timely to evaluate the media and methods thus far proposed for their isolation. Many of the media have been discussed previously.[35] Several of the media are opaque and do not lend themselves well to the microscopic detection of the small colonies of PPLO by transmitted light. The preparation of many of the media is a laborious process. A basal medium has been described[34] which is available in the dehydrated form and requires only solution in water and sterilization. It has additional advantages in that it is clear and readily lends itself to the microscopic examination of cultures. This has been compared to the medium of Dienes which was used in the early work with PPLO in this country.

MATERIALS AND METHODS

Media: All of the media were prepared at the same laboratory. The formulae, methods of preparation, and incubation conditions of the various media were as follows:

A. *Dienes Medium*[7]

1. *Formula and preparation of basal medium.*

Bacteriologic peptone (Parke, Davis & Co.)	10 gm.
Sodium chloride	5 gm.
Agar	20 gm.
Infusion from fresh beef heart	1,000 ml.

Defatted fresh beef heart muscle was ground and 1,000 ml. of tap water added for each pound of ground heart. After allowing this infusion to remain in the refrigerator overnight, the *p*H was adjusted to 8.0. It was then heated to boiling and strained through a few layers of cheesecloth. The above ingredients were added, dissolved and the *p*H readjusted to 8.0. Following filtration through cotton and gauze, the medium was dispensed in suitable containers and autoclaved at 121° C. for 15 minutes. The brand of peptone was not specified by Dienes.[7] Previous work by ourselves[35] has shown that peptones vary greatly in their ability to support growth of PPLO.

2. Preparation of the final medium.

The agar base was melted and cooled to 60° C. Two per cent packed horse blood sediment was added. The mixture was heated in a boiling water bath and then immediately placed in a water bath at 50° C. After the coagulum sedimented, the supernatant was decanted. To this supernatant sterile human ascitic fluid (Difco) was added to a concentration of 30 per cent of the total volume and the final medium poured into plates.

After inoculation these plates were incubated aerobically at 37° C.

B. *Dienes Medium*

This medium was the same as A, above, except that the plates after inoculation were incubated anaerobically.

C. *Bacto-PPLO Agar with Ascitic Fluid as Supplement*

This medium has been described by Morton, Smith and Leberman.[35]

1. *Formula and preparation of the basal medium.*

Bacto-peptone	10 gm.
Sodium chloride	5 gm.
Agar	14 gm.
Infusion from 50 gm. Bacto-beef heart for infusion	1,000 ml.

Final reaction was *p*H 7.8

The dehydrated medium, Bacto-PPLO agar, was rehydrated by suspending 34 gm. in 1,000 ml. of freshly distilled water and by heating to boiling to completely dissolve the medium. After dispensing into suitable containers, the medium was autoclaved at 121° C. for 15 minutes.

2. Preparation of the final medium.

The basal medium was melted and then cooled to below 60° C. Human ascitic fluid (Difco) was added to a concentration of 25 per cent of the total volume and the medium poured into plates. These plates were incubated aerobically at 37° C. after inoculation.

D. *Bacto-PPLO Agar with Serum Fraction A (Bovine) as Supplement*

The preparation of PPLO serum fraction A from bovine serum for use as a supplement for the cultivation of PPLO has been described by Smith and Morton.[58]

1. *The formula and preparation of the basal medium was the same as C, above.*

2. Preparation of the final medium.

The basal medium was melted and cooled to below 60° C. One per cent PPLO bovine serum fraction A (Difco) was added and the medium poured into plates. Incubation of these plates after inoculation was carried out aerobically at 37° C.

E. *Bacto-PPLO Agar with Serum Fraction A (Bovine) as Supplement*

This medium was the same as D, above, except that the inoculated plates were incubated anaerobically.

COLLECTION OF SPECIMENS

Saliva: Morning samples of saliva were obtained by having the subjects chew sterile paraffin for three minutes as described previously.[36]

Sputum: These were samples of sputum forwarded to the Bureau of Laboratories, Department of Health of the Commonwealth of Pennsylvania, by physicians for examination for tubercle bacilli. The specimens used in these studies were those in which no acid-fast bacilli had been demonstrated by the Ziehl-Neelsen technic.

Throat cultures: Specimens from the throat were obtained in the customary manner by means of a sterile cotton swab and tongue depressor. A suspension of the material on the swab was

made in 1.5 ml. of Bacto-heart infusion broth.

Fingernail cultures: Material was collected from beneath the finger nails with a sterile orangewood stick and suspended in 1.5 ml. of Bacto-heart infusion broth.

Cervical cultures: The cervix was exposed by means of a lubricated speculum. Material from the cervical canal was collected with a sterile cotton swab and suspended in 1.5 ml. of Bacto-heart infusion broth.

Urethral cultures: The discharge from the urethra was collected by means of a sterile cotton swab and suspended in 1.5 ml. of Bacto-heart infusion broth.

Prostatic cultures: Prostatic secretions following prostatic massage were collected from the end of the urethra with a sterile cotton swab and suspended in 1.5 ml. of Bacto-heart infusion broth.

Semen: Approximately 0.2 ml. of semen was transferred by means of a syringe to a tube containing 1.5 ml. of Bacto-heart infusion broth. The specimens were those submitted to a fertility research laboratory.

Stool cultures: These were samples of stools forwarded to the Bureau of Laboratories, Department of Health of the Commonwealth of Pennsylvania, by physicians for bacteriological examinations. Approximately a 10 per cent suspension of the feces was prepared in Bacto-heart infusion broth. In 3 cases the stool specimen was forwarded in the buffered glycerol saline preservative medium of Sachs.[32] The 3 samples did not yield PPLO. Preliminary tests showed that a 50 per cent solution of glycerol did not kill cultures of PPLO.

Bronchial cultures: Material obtained with the bronchoscope was transferred to 1.5 ml. of Bacto-heart infusion broth by means of a sterile cotton swab.

Most specimens were cultured within 6 hours after collection. The exceptions were the semen samples which were cultured after a lapse of 1–6 days. In the case of saliva, sputum, and stool samples which were transported through the mails, the delay in culturing was as long as 5 days. Some of the cervical specimens were in the transport medium as long as 1 to 3 days. Delay in culturing specimens has not been observed to have a deleterious effect.

METHOD OF INOCULATION

The media were arranged alphabetically for inoculation. The method of inoculation was such that the same medium was not always inoculated first. For example, in the first series medium A was inoculated first with specimen No. 1. In the second series, medium B was the first to be inoculated with specimen No. 2, and medium A was the last to receive the inoculum. In the third series medium C was the first to be inoculated with specimen No. 3, and media A and B were the next to last and last. All of the solid media, A, B, C, D, and E, were inoculated with 0.1 ml. of a 1.5 ml. suspension of the specimen. The inocula were spread evenly over the plate with a sterile bent glass rod.

INCUBATION AND EXAMINATION OF CULTURES

The inoculated plates were incubated at 37° C. for 48 hours. Plates of media A, C, and D were incubated aerobically and of media B and E, anaerobically with added 10 per cent carbon dioxide by the method described by Morton.[33]

The plates were examined under the low power (100 X) of the microscope. Any suspected colonies were removed by cutting out an agar block and stained by the method of Dienes. Subcultures were made from one medium of all specimens which appeared positive onto the same type of medium. Following 48 hours of incubation these plates were read and PPLO colonies stained as previously. Only one reading, the 48-hour reading, was made on each plate.

TABLE 1

Evaluation of Media and Methods for Isolating Pleuropneumonia-like Organisms from Clinical Specimens

Number	Source of Specimens	Medium A PPLO +	A PPLO −	B PPLO +	B PPLO −	C PPLO +	C PPLO −	D PPLO +	D PPLO −	E PPLO +	E PPLO −
27	cervix (a)	7	20	8	19	7	20	8	19	9	18
12	cervix (b)	0	12	0	12	0	12	0	12	0	12
5	urethra, male (c)	3	2	3	2	3	2	3	2	3	2
28	semen (b)	0	28	0	28	0	28	0	28	0	28
4	prostate	0	4	0	4	0	4	0	4	0	4
26	saliva	20	6	20	6	20	6	20	6	20	6
13	throat	4	9	3	10	3	8	3	8	4	9
27	sputum	10	17	14	13	12	15	14	13	14	13
27	feces	2	25	1	26	2	25	3	24	3	24
10	bronchi	1	9	1	9	1	9	1	9	1	9
10	finger nail scrapings (d)	0	10	0	10	0	10	0	10	0	10
Total	189	47	142	50	139	50	139	54	135	54	135
Per cent positive of 189 specimens cultured		24.9		26.5		26.5		28.6		28.6	

a. Obstetrical, gynecological, and urological patients.
b. From healthy individuals being studied in a fertility research laboratory.
c. Urological patients.
d. Six of these individuals had PPLO in the oral cavity.

RESULTS

The results of cultivating 189 clinical specimens on plates of different media and under aerobic and anaerobic conditions are summarized in Table 1. Of the 189 specimens 28.6 per cent were positive on the Bacto-PPLO agar enriched with PPLO bovine serum fraction A incubated either aerobically or anaerobically (media D and E); 26.5 per cent were positive on PPLO agar enriched with ascitic fluid and incubated aerobically and on Dienes medium incubated anaerobically (media C and B), and 24.9 per cent were positive on Dienes medium incubated aerobically (medium A).

DISCUSSION

The experiment was designed so that Dienes medium (plates A and B) would serve as the base line. The results confirm Dienes' observation that anaerobic incubation of cultures on his medium facilitates the growth of PPLO from clinical specimens. Forty-four specimens were positive for PPLO on Dienes medium incubated aerobically (A) and anaerobically (B). Six specimens (4 sputa, 1 throat, and 1 cervical) were positive for PPLO on Dienes medium only when the cultures were incubated anaerobically (B). However, there were three specimens (1 stool, 2 throat) which were positive for PPLO on Dienes medium only when the cultures were incubated aerobically (A).

Media A and C provided a comparison of the basal media. It is evident from the results in Table 1 that an infusion from commercially available dried beef heart is at least as satisfactory as one prepared from fresh beef heart for supporting growth of PPLO. Of the 50 specimens that were positive for PPLO on medium C, 47 were positive on medium A also. There were 3 specimens (2 sputa, 1 throat) which were positive on medium C and negative on medium A (Dienes medium). No specimens were positive on medium A and negative on medium C.

Media C and D were used for a comparison of ascitic fluid (C) and PPLO serum fraction A (D) as supplements for the basal medium. Of the 54 specimens positive for PPLO on medium D, 51 were positive on both media C and D, while 3 specimens (2 sputa, 1 feces) were positive on Medium D and nega-

tive on medium C. No specimens grew on medium C and not on medium D. It is evident that PPLO serum fraction A is equally as good as ascitic fluid for supplying the necessary growth factor for PPLO. Some of its other advantages as a supplement have been mentioned previously.[58] It may be dried and the rehydrated material is satisfactory as a supplement.

Media D and E were used for comparing aerobic (D) and anaerobic (E) incubation of cultures when PPLO serum fraction A was employed as the supplement. Fifty-three specimens were positive for PPLO on both media D and E. One specimen from the throat, No. 48, grew on medium D but not on medium E. This specimen also failed to grow on medium B which was likewise incubated anaerobically. Another, a cervical specimen, No. 174, was positive for PPLO on medium E and not on any of the other media. It is apparent that anaerobic incubation does not increase the number of isolations of PPLO as much in the case of PPLO serum fraction A as when ascitic fluid is employed for the supplement. This substantiates earlier observations[35] that anaerobic incubation enhances growth of PPLO to a greater extent if the medium is in some way deficient in supporting growth of these organisms. Comparing Dienes medium (A) with Bacto-PPLO agar enriched with PPLO serum fraction A (D) there were 47 and 54 positive isolations, respectively. The odds against this difference being due to chance are about 6 to 1, which are not significant.

It is of interest that one-third of the cervical cultures of women attending the obstetrical and gynecological clinic were positive for PPLO, whereas none of the 12 women cultured during fertility studies were positive. The latter patients had better social backgrounds and better personal hygiene, which may be important factors. Failure to isolate PPLO from the semen of 28 normal, healthy males brings the total number of such cases studied to 145 with all cases negative for PPLO except one individual who was referred by a urology clinic. Finding 20 of 26 samples of saliva positive is a higher incidence than reported previously, but it may be due to the small number of samples. The incidence of throat cultures positive for PPLO is comparable to that reported previously. The frequency of positive fecal cultures is comparable to that reported by Harkness. The incidence of PPLO in sputa from cases suspected of being tuberculous is not much different than that for saliva from normal individuals. It is possible that the presence of PPLO in the sputa was due to the contamination of the sputa with saliva. The study of material collected with the bronchoscope warrants further study.

The venereal transmission of PPLO still remains a possibility. In the present study PPLO were isolated from the urethral discharge of one male who presented himself at a urology clinic and from a cervical culture from his wife. The husband had a gonococcal infection a few months previously for which he received penicillin. After terramycin therapy,[30a] PPLO were not found in cultures from these individuals. Among the specimens received from the fertility research laboratory, the cervical cultures from two wives and the semen from their husbands were negative for PPLO. In a previous study[34] two instances were reported in which PPLO were isolated from husbands and their wives.

CONCLUSIONS

PPLO appear to be ubiquitous microorganisms which should be searched for in material from all inflammatory conditions in which ordinary bacteria cannot be found. Material from the genitourinary tract should be examined for PPLO, especially when there are accompanying symptoms in the joints and

eyes. It might be well to look for these organisms following penicillin therapy. Culturing for PPLO should be a routine procedure in every diagnostic laboratory.

These studies indicate that an infusion from a commercially available dried beef heart is at least as satisfactory as one prepared from fresh beef heart muscle for the basal medium.

PPLO serum fraction A prepared from beef serum is at least as satisfactory as ascitic fluid for supporting growth of PPLO *in vitro*.

Anaerobic incubation of cultures does not appear to be as necessary for growth of PPLO when serum fraction A is employed as a supplement as when ascitic fluid is used.

Of 189 clinical specimens, 55 were positive for PPLO. Among these 55 strains there was one strain which was a strict aerobe and one strain which was a strict anaerobe.

It is now possible to cultivate PPLO reliably from clinical material by the use of commercially available culture media and supplement, Bacto-PPLO agar and Bacto-PPLO bovine serum fraction A.

The medium of choice appears to be Bacto-PPLO agar containing the infusion from 50 gm. Bacto-beef heart for infusion, 10 gm. Bacto-peptone, 5 gm. sodium chloride, and 14 gm. agar in each 1,000 ml. The final reaction is *p*H 7.8. The supplement of choice is PPLO bovine serum fraction A employed in a minimum concentration of one per cent.

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Applications for Grants in Cancer Research

The Committee on Growth of the National Research Council, acting for the American Cancer Society, is accepting applications for new grants in support of cancer research. Applications received before October 1 will be considered during the winter and recommendations made for grants that will become effective July 1, 1953. Investigators now receiving support will be notified regarding application for renewal of their grants.

The Committee believes that a clear understanding of cancer must rest upon a deeper insight into the nature of the growth process, normal and malignant. Therefore, the scope of the research program is very broad and includes, in addition to clinical investigations on cancer, fundamental studies in the fields of cellular physiology, morphogenesis, genetics, virology, biochemistry, metabolism, nutrition, cytochemistry, physics, radiobiology, chemotherapy, endocrinology, and environmental cancer.

During the past year the American Cancer Society has awarded approximately 250 grants totaling about $1,700,000. A similar program is planned for the coming year.

Application blanks and further information from Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

Comparison of Histoplasmin Sensitivity Rates Among Human Beings and Animals in Boone County, Missouri

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VARIOUS workers, in an attempt to explain the epidemiology of histoplasmosis, have suggested that certain animals might be reservoirs of the infection. DeMonbreun[1] and later Prior and Cole[2] have suggested dogs as a possible reservoir. Emmons[3] has suggested wild rodents, in particular, rats. Ruhe and Cazier[4] reported that reactions to histoplasmin occurred among cattle and the frequency of reactors in Kansas decreased from east to west just as Palmer[5] showed that the frequency of reactors in human beings decreased in this state.

Furcolow and Ruhe[6] compared the human and cattle rates in Shawnee County, Kansas. They found that the age-specific rates were quite similar in human beings and cattle.

Recently more extensive work has been done among children and animals in Boone County, Missouri. The entire rural school population has been skin tested in this county. The method of skin testing the children has been reported[7] and consisted in the intracutaneous injection of 1/10th ml. of histoplasmin Lot H-40, diluted 3:1,000. The reactions were read at 48 hours and measurements were made of both erythema and induration. A positive test was considered to be one in which the induration measured 5 mm. or more in diameter. An analysis of the effect of residence, rainfall, and other factors on the reaction rates among children has been made.[7]

Animals on farms throughout the county were tested (for location see[8]). An analysis of the histoplasmin rates among these animals has been previously presented.[8] In the present paper these data have been revised to include only lifetime residents, and data obtained after testing 3 additional herds of cattle have been added. The method used to skin test the various animals has been reported.[9] In brief, it consisted of the intradermal injection in the cervical region of 1/10th ml. of histoplasmin Lot H-3 and 4, undiluted. Measurement of the induration was made at 48 hours and the reaction was considered positive if the induration measured 5 mm. or more in diameter at this time.

The present paper is concerned primarily with the comparison of human and animal rates in Boone County, Missouri.

The human and animal histoplasmin sensitivity rates according to age in Boone County are presented in Table 1. These data are presented graphically in Figure 1. It should be noted that the rates for animals and human beings increase with age, although the animal rates are lower. The human rates are extremely high. In fact, they represent

TABLE 1

Human and Animal Histoplasmin Sensitivity Rates Among Lifetime Residents According to Age in Boone County, Missouri

		Age in Years (Last Birthday)						
		Under 2	2 and 3	4 and 5	6 and 7	8 and 9	10 and 11	Total
Children	No. Tested	13	73	113	299	287	262	1,047
	No. Pos.	2	30	70	250	248	241	841
	% Pos.	15	41	62	84	86	92	80
						8 and over		
Horses	No. Tested	2	3	4	11	24		44
	No. Pos.	0	3	1	8	20		32
	% Pos.	0	100	25	73	83		73
Sheep	No. Tested	66	22	21	46	7		162
	No. Pos.	1	4	5	23	4		37
	% Pos.	2	18	24	50	57		23
Cattle	No. Tested	195	198	65	41	23		522
	No. Pos.	5	27	11	13	12		68
	% Pos.	3	14	17	32	52		13
Swine	No. Tested	127	2	0	0	0		129
	No. Pos.	2	0	0	0	0		2
	% Pos.	2	0	0	0	0		1
Chicken	No. Tested	83	10	4	1	0		98
	No. Pos.	1	0	0	0	0		1
	% Pos.	1	0	0	0	0		1
Turkey	No. Tested	25	0	0	0	0		25
	No. Pos.	0	0	0	0	0		0
	% Pos.	0	0	0	0	0		0

the highest rates as yet reported in the literature. It is seen that 84 per cent of the children are positive to histoplasmin by the time they are 7 years of age. Indeed, it has been estimated that an annual conversion rate of 20 per cent per year must be operative to yield the observed rates of reaction among these children. Among the animals, the horses show the highest rate, which approaches closely the human rate. The rates among sheep and cattle are quite similar, with sheep having slightly higher rates than cattle. However, even for cattle over half (52.4 per cent) of those tested who were 8 years of age or over were positive.

Tests were also conducted among chickens and swine and a few reactors were found. Since animals older than 2 years of age were not available in these species, no age-specific rates could be determined. No reactors were found among 25 turkeys, age 5 months.

It is of interest to mention that following the extensive testing program in Boone County, human, canine, and bovine cases of histoplasmosis were found.[10] In the vicinity of the bovine case an extensive skin testing survey with histoplasmin was conducted on farms within a half-mile radius. In this area 258 cattle were tested. In Table 2 the histoplasmin skin test results among

FIGURE 1—Per cent of Positive Reactors to Histoplasmin by Age Among Children Compared to Horses, Cattle, and Sheep, all Lifetime Residents of Boone County, Missouri.

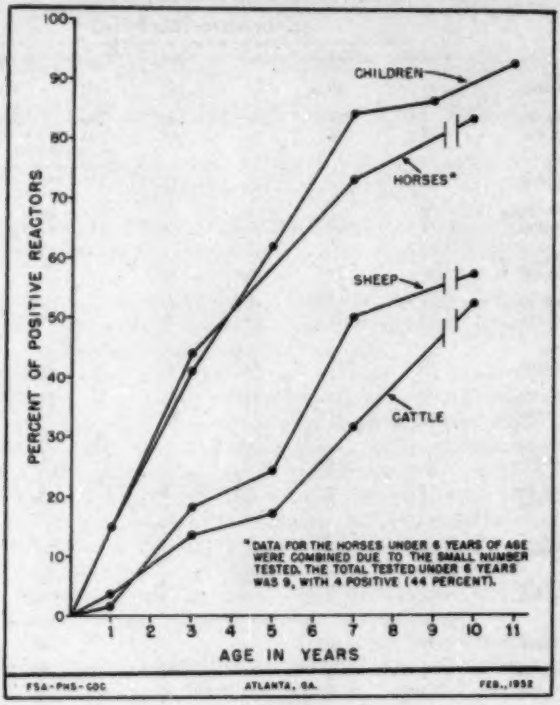
PERCENT OF POSITIVE REACTORS
AGE IN YEARS
CHILDREN
HORSES*
SHEEP
CATTLE
*DATA FOR THE HORSES UNDER 6 YEARS OF AGE WERE COMBINED DUE TO THE SMALL NUMBER TESTED. THE TOTAL TESTED UNDER 6 YEARS WAS 9, WITH 4 POSITIVE (44 PERCENT).
FSA-PHS-CDC
ATLANTA, GA.
FEB., 1952

TABLE 2

Histoplasmin Sensitivity Rates Among Cattle and School Children, Lifetime Residents of the Vicinity of a Bovine Case of Histoplasmosis in Missouri

	Age in Years (Last Birthday)					
	Under 2	*2 and 3*	*4 and 5*	*6 and 7*	*8 and over*	*Total*
			Cattle			
Number Tested	124	58	44	21	11	258
Positive	3	14	6	8	5	36
Per cent Positive	2	26	14	38	46	14
			Children			
Number Tested	0	15	29	67	89	200
Positive	0	5	8	43	60	116
Per cent Positive	0	33	28	64	67	58

these cattle are compared to the skin test results obtained on testing 200 school children who attended rural schools within three miles of the farm on which the bovine case of histoplasmosis was found. The rates in cattle and children both increased with age, although the rates in children were higher.

It is interesting to note that the cattle

in the vicinity of a case have somewhat higher rates than the rates for cattle for the county as a whole, while the children from the schools in the vicinity of the bovine case have somewhat lower rates than the county as a whole. In general, among cattle and children, the rates, therefore, are more nearly alike than the rates for the county as a whole.

The similarity of the histoplasmin rates among animals and human beings indicates that both may have been infected from some common source. In view of the increasing number of reports concerning the isolation of *Histoplasma capsulatum* from soil, Emmons,[11, 12] Ajello and Zeidberg,[13] Grayston, *et al.*,[14] as well as ourselves,[15] it seems possible that the common source may be soil which contains spores of the fungus.

SUMMARY

1. A comparison of the rates of reaction to histoplasmin among animals and children in Boone County, Missouri, is presented.

2. Similar but slightly lower rates prevail among horses than among human beings.

3. The rates among sheep and cattle are similar, with the cattle rates being somewhat lower.

4. Reactions also occur among swine and chickens but age-specific rates could not be determined.

5. From analysis of the rates of reaction of cattle and children in the vicinity of a case of bovine histoplasmosis, it appears that the bovine rates were higher and the human rates lower among these groups than among the cattle and human beings in the county as a whole.

6. In general, the most striking finding of this comparison of the histoplasmin sensitivity rates between human beings and animals is increasing rates of reaction with age in all species. This can be interpreted as evidence of a common source of infection rather than one species infecting the other.

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ADDENDUM—Since this article was written *Histoplasma capsulatum* has been isolated from soil and bark obtained from two farms in Boone County, Missouri.

Isolation of *Histoplasma capsulatum* from Soil*

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FOR 40 years after its discovery by Darling,[1] histoplasmosis was a rare medical curiosity and thought to be of too little public health significance to excite the interest of the epidemiologist. It was only after Christie and Peterson[2] had demonstrated the common occurrence of human infection with *Histoplasma capsulatum* that attention began to be centered on the source of the agent in nature. The fungus has been recovered from human beings, animals,[3] soil,[4-6] and river water.[7] Man, although apparently one of the most frequently infected hosts, does not appear to transmit the organism to other human or animal contacts. At least there is no conclusive proof of such transmission. Although animals have been found to harbor the specific fungus, there is no evidence to indicate that they are the reservoirs, rather than the victims, of the organism. The almost universal distribution of many of the animal species known to be susceptible hosts, in contrast to the sporadic geographic occurrence of histoplasmosis, makes it highly improbable that animals are the natural sources of *H. capsulatum*. The presence of the fungus spores in river water probably results from the washing of soil into the river during heavy rains. Soil appears, therefore, to be the most likely source of the fungus in nature. It is in the soil that one day may be found the solution to the mystery of the peculiar geographic distribution of histoplasmin sensitivity.

SOIL STUDIES

The Williamson County Tuberculosis Study undertook the epidemiologic investigation of histoplasmosis in 1945 because of the high prevalence of pulmonary calcification in the presence of negative tuberculin reactions among residents of the County[8] and because of the many similarities between tuberculosis and histoplasmosis. An extensive program of histoplasmin skin testing was initiated at first, in order to obtain information regarding the distribution of sensitivity in the population. Later, other epidemiologic factors came under investigation. The results of some of these studies have been reported previously.[9] A program for the mycological study of soil in the County was begun in July, 1950.

Plan—The homes of individuals who had been skin tested with histoplasmin were visited, and usually five samples of surface soil were obtained about the

* This investigation was made possible by the financial support of the U. S. Public Health Service and of the Division of Medicine and Public Health of the Rockefeller Foundation.

premises. In many instances house dust also was collected for study. Soil was taken from places where the residents showed a high prevalence of sensitivity to histoplasmin, as well as from places where few or none reacted to the antigen. Further selection was made to assure the collection of soil samples from every part of the County. Since there was no precedent to indicate the most likely sources of *H. capsulatum* in soil, other than around rat burrows,[4] samples were taken usually near the dwelling and in and around places where animals were concentrated, such as chicken houses, barnyards, and barns. Previous studies had indicated that a damp environment might be a factor in the prevalence of histoplasmin sensitivity,[9] so soil samples were collected near bodies of water whenever they were located reasonably near the dwelling.

At the time of the visit an epidemiologic investigation was made and data were recorded concerning the nature of the terrain around the residence (such as elevation and slope, etc.); evidence of dampness inside and outside the house; the presence or absence of shade trees; the character of the soil; the presence of bodies of water and their proximity to the house; and the kind and number of rodents and domestic animals about the place. The source of each soil sample was also recorded, and an identification number was assigned to each.

The soil specimens were shipped to the Mycology Laboratory of the Communicable Disease Center for study. The mycologist had no knowledge of the source of the soils. Results were reported by the identification number.

Isolation Method—Soil samples were collected by scooping soil into 4-ounce glass jars which, after sealing with plastic screw-caps and labeling properly, were mailed to the mycology laboratory. The samples were examined for the presence of *H. capsulatum* and other pathogenic fungi by using the method developed by Stewart and Meyer.[10] This procedure was later modified by Emmons and successfully used for the isolation of *Histoplasma* from soil.[4] After thorough mixing, a heaping teaspoonful of soil was placed in a 25 x 150 mm. test tube containing 30 ml. of physiological saline and was stirred vigorously with a glass rod. This suspension was allowed to stand for 1 hour, then 5 ml. of the supernatant were pipetted off, and 1 ml. aliquots were injected intraperitoneally into each of 4 mice. At the end of 2 weeks the mice were sacrificed, and 2 tubes of a neutral dextrose-peptone agar * were inoculated with portions of the liver and 2 tubes with portions of the spleen. The agar tubes were incubated at 25° C. and were examined at intervals during a period of 6 weeks.

Early in the course of the study this procedure was modified on the basis of findings by Strauss and Kligman,[11] who demonstrated that in fungus infections in mice, gastric mucin altered the agent-host relationship in favor of the fungus. Accordingly, 5 ml. of the soil supernatant were mixed with 5 ml. of 5 per cent gastric mucin,† and 1 ml. aliquots were injected into mice as described above. It was soon learned, however, that the use of mucin necessitated treating the mice for the first week with daily intraperitoneal injections of a mixture of streptomycin (1,000 units) and penicillin (12,500 units) to prevent lethal bacterial infections.

This procedure and some preliminary results were described previously by Ajello and Zeidberg in 1951.[5]

Results—By August, 1951, 299 soil, 18 chicken manure, and 35 house dust samples had been obtained from 70

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* Dextrose 1.0 gm.
Neopeptone 1.0 gm. adjusted to pH 7.0
Distilled water 100.00 ml.
Agar 2.0 gm.

† Granular mucin, Type 1701-W, The Wilson Laboratories, Chicago, Ill.

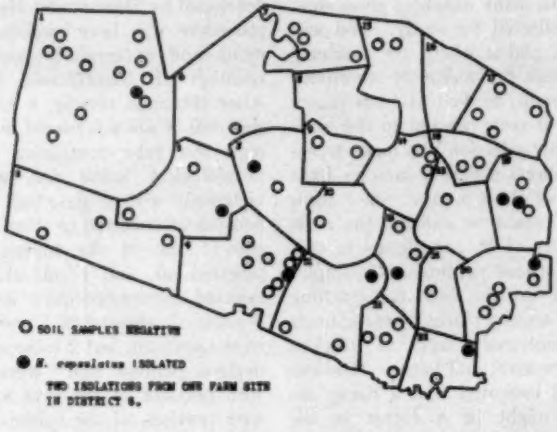

FIGURE 1—Location of 70 Premises from Which Soil Samples Were Obtained and Premises with *Histoplasma capsulatum* Isolated, Williamson County, Tennessee, July, 1950–August, 1951

premises distributed widely over the County (Figure 1). *H. capsulatum* was isolated from 11 samples of soil collected on 10 different places, concentrated in the southern and eastern part of the county (Figure 1). None of the samples of chicken manure or of house dust yielded the specific fungus.

The sources of the samples and the percentage of isolations of *H. capsulatum* from each source are shown in Table 1. Although soil was obtained from 9 different source categories, the fungus was isolated from only 3 of these: under dwellings, inside chicken houses, and from chicken yards.

The highest percentage of isolations was obtained from samples collected in chicken houses and chicken yards.* Of 51 specimens of soil taken from these 2 sources, the organism was found in 7 or 13.7 per cent. Of the remaining 248 samples, only 4 were positive (1.6 per cent). These differences are statistically significant. The possible importance of the association of chickens with the occurrence of *H. capsulatum* in soil will be discussed in the next section.

The influence of shelter came under consideration because it had been observed that most of the isolations were obtained from soil in protected sites. Ninety-two samples of soil were from sheltered places, such as inside chicken houses, underneath dwellings, and inside

TABLE 1

Results of Examinations of Soil Samples Collected from 70 Premises, by Sources of Samples, Williamson County, Tennessee, July, 1950–August, 1951

Source of Sample	Number of Samples	H. capsulatum Isolated Number	Per cent
Total	299	11	3.7
Near house	93	–	–
Under house	51	4	7.8
Inside chicken house	37	5	13.5
Chicken yard, run, etc.	14	2	14.3
Barn yard	23	–	–
Inside barn	4	–	–
Bank of water course	45	–	–
In open	25	–	–
Other	5	–	–

* This association of chickens and *H. capsulatum* in soil was reported in a paper presented at the annual meeting of the Tennessee Veterinary Medical Association in Chattanooga, Tenn., January 15, 1952.

barns. Of these, *H. capsulatum* was isolated from 9 (10 per cent). Only 2 positive soils (1 per cent) were found among the 207 specimens from open places, but these 2 were from chicken yards. The association of chickens may in some way mitigate the effect of exposure.

STUDIES OF FOWL

The comparatively frequent isolation of *H. capsulatum* from the soil of chicken houses and yards, as noted above, led to a consideration of the role of domestic fowls in the occurrence and distribution of the fungus. Suggestive evidence of this association has appeared in the literature recently. Several instances are reported of the development of acute respiratory disease in individuals who were exposed to high concentrations of pigeon and chicken manure dust.[12-16] Although in none of these reports was *H. capsulatum* conclusively implicated as the etiologic agent, in some, the affected individuals developed relatively high histoplasmosis complement-fixation titers, strong skin test reactions to histoplasmin antigen, and subsequent extensive pulmonary calcification so commonly seen in areas of high prevalence of histoplasmin sensitivity. The occurrence of these cases in close association with the excreta of fowl was quite suggestive, particularly in the light of the findings in the present study.

At least three possibilities concerning the association of chickens and *H. capsulatum* in soil came to mind: either (1) chickens were the natural reservoir and contaminated soil by excretion of the fungus; or (2) chickens, if infected and diseased, were by the nature of their feeding habits victims of their close association with soil that was naturally the habitat of the fungus; or (3) chickens neither were infected by soil nor contaminated it, but provided nutrients for the growth of the fungus. Since chickens are among the commonest of domestic animals in the United States and in many parts of the world, it seemed unlikely that they could be the reservoir of the organism, otherwise the sporadic geographic distribution of infection with *H. capsulatum* would not obtain. The greater probabilities were either that they were infected by soil, or that they were merely contributors to the enrichment of the natural culture medium.

In order to determine whether chickens are susceptible to infection with the specific fungus, 2 hens were purchased from each of 6 places where *H. capsulatum* had been isolated. All 12 were tested with histoplasmin,* 0.1 ml. inoculated intradermally in the wattle. The first 8 were tested with the antigen in a dilution of 1–1,000, but full-strength histoplasmin was used on the remaining 4. All failed to react. The 12 hens were sacrificed, and cultures of organ tissue were made. All cultures were negative for *H. capsulatum*. These numbers are too small to draw any sweeping conclusions. The most that may be said is that thus far, on premises of proved occurrence of *H. capsulatum* in soil, hens that were closely associated with these soils showed no evidence of infection or disease. Eighty-nine chickens from several areas in Williamson County were tested with full-strength histoplasmin,† and only 2 were positive. These 2 were sacrificed and cultures were made of their internal organs. Cultures were negative for *H. capsulatum*.

Menges[17] tested 98 hens in an area of high prevalence of histoplasmin sensitivity and found only 1 reactor to full-strength antigen. Eighteen samples of hen manure obtained in the present study failed to yield *H. capsulatum* on mouse culture. It appears that fowls probably do not harbor the organism

* Lot 1, CDC Antigen.

† CT-189, Histoplasmin, Concentrated, supplied by Eli Lilly & Co., Indianapolis, Ind.

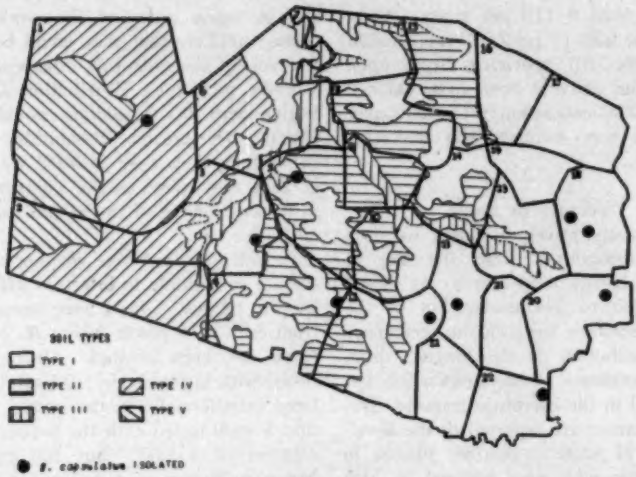

FIGURE 2—Distribution of Soil Types and Location of Premises Where *Histoplasma capsulatum* Was Isolated from Soil, Williamson County, Tennessee, July, 1950–August, 1951

and therefore cannot be directly responsible for its presence in soil.

RELATION OF SOIL TYPE AND THE PRESENCE OF *H. capsulatum* IN SOIL

Williamson County has 5 general soil types which are differentiated by variations in depth, *p*H, permeability, texture, organic and inorganic components, etc. The distribution of these types is shown in Figure 2.* The places from which *H. capsulatum* was isolated in the present study are also spotted on this map. In 10 instances the fungus was recovered from Type I soil, which is described as shallow, acid, of slow permeability, and low organic content. The only other isolation was made from Type IV soil, which differs from Type I chiefly in its high organic content. The other soils in the County are generally deeper, more alkaline, and of faster permeability. Although many samples have been taken from these other soils (see Figure 1), no isolations have been obtained thus far.

No definite conclusions may be drawn from these few observations. They do suggest, however, with what is known of the cultural requirements of fungi, that certain factors may operate to influence the effectiveness of soil as a culture medium for *H. capsulatum*. A shallow soil with slow permeability, particularly if ground slope is minimal, tends to retain moisture over prolonged periods of time in a climate where the rainfall is adequate and the humidity is high.

The acid character of the soil may also enhance fungal activity since it is known that many fungi decompose organic matter most effectively in an acid medium. *H. capsulatum* is known to grow over a wide range of *p*H in artificial culture media, but its preferential *p*H in nature is not known.

The occurrence of the fungus in a soil type with a characteristically low or-

* The original soil maps of the County were prepared by Douglas Moyers and C. H. Jent of the U. S. Dept. of Agriculture, Soil Conservation Service.

ganic content is, on the surface, somewhat contradictory in view of the known nutritional requirements for fungal growth. However, most of the positive soil samples were obtained from sites where chickens were concentrated, and it might be presumed that these soils were rich in organic matter. This presumption was proved correct when chemical analyses by Dr. L. G. Olson of the Georgia Agricultural Experiment Station showed that the positive soil samples had a high organic matter content.

The influence of these various factors on the occurrence of *H. capsulatum* in soil is no more than speculative at present. It is suggested, however, that further investigation is in order, and may eventually uncover the true explanation for the observed geographic differences in the distribution of *H. capsulatum*.

SUMMARY

1. Mycological studies of soil were undertaken as part of the general epidemiologic investigation of histoplasmosis in Williamson County, Tenn.

2. A modification of the soil-flotation, mouse-inoculation method for isolating pathogenic fungi from soil was used.

3. Two hundred and ninety-nine soil, 18 chicken manure, and 35 house dust samples were collected from 70 premises distributed over the County. Isolations of *H. capsulatum* were obtained from 11 of the soil samples.

4. Of 51 specimens taken from inside chicken houses or chicken yards, 7 were positive, a percentage of 13.7 compared to only 1.6 per cent isolations for 248 samples from other sources.

5. Nine of 92 soil samples from sheltered sites were positive, while the fungus was isolated from only 2 of 207 samples from open places, and these 2 were from chicken yards.

6. The association of domestic fowls with *H. capsulatum* in soil was investigated. The prevalence of histoplasmin sensitivity in chickens is apparently extremely low, and no cases of chicken histoplasmosis were found.

7. The soils in which *H. capsulatum* was found were shallow, acid, and of slow permeability. The possible significance of these findings is discussed.

8. Further studies of soil are suggested as a means of discovering the explanation for the observed sporadic geographic distribution of *H. capsulatum*.

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The Engineering Approach to Cleaner Air for the Community*

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JUST what do we mean by air pollution? Clearly, the term refers to foreign matter in the air. But how much foreign matter and what kinds of it must the air carry before we say that the air is "polluted"? A few decades ago, heavily contaminated air was often regarded as merely an inconvenience—part of the price we must pay for the benefits of the machine age. In those days, nothing short of a dense cloud of noxious fumes would have been described as "air pollution." The other extreme point of view is to regard any foreign matter in air as a pollutant, whether it is harmful or not. On this basis, even the refreshing air of a primeval forest is polluted, for it contains pollen, wind-borne dust, and gases from decaying vegetation.

For our purposes, a middle-of-the-road definition is more useful than either of these extremes. The present trend is to define air pollution on the basis of its effects. There are, broadly, three major effects. One is injury to property, including crops and other vegetation; another is injury to health, and the last is the nuisance factor, involving human comfort and convenience.

On this basis, we may define air pollution simply as any concentration of contaminants in the air which is injurious to property, to health, or to comfort. This definition puts the emphasis where it belongs—on effects, not on arbitrarily chosen concentrations. It is a practical working definition.

Furthermore, this definition allows room for the effects of weather and topography. A stack-top concentration that would create real problems in Charleston, W. Va., or Los Angeles, Calif., might be harmless on the flat windswept Great Plains. This is why the ability of the air in any area to disperse contaminants is so important a part of air pollution studies.

SMOKE AND FLY ASH

The air contaminants most frequently encountered are smoke and fly ash. Smoke is usually considered to be the fine carbon particles resulting from the incomplete combustion of fuel. It is well known as the black effluent gas from an industrial stack, a railroad locomotive, or the chimney of a home or school. It is not so well known that smoke may result from the burning of waste oil at a refinery or burning of natural gas with insufficient air, as in making lamp black. It is also seen in the exhaust from diesel locomotives and trucks. Burning trash and leaves in metropolitan areas and gob piles in the coal mining areas add their share to the production of smoke. It is easily seen that there are many sources of smoke.

Much of the smoke may be prevented or reduced by following sound engineering principles. The first step is to make sure that the combustor is properly designed to burn the fuel being used. This includes providing sufficient air, time, turbulence, and a high enough temper-

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ature for complete combustion. Next, it is necessary to have the proper control equipment and auxiliaries for the installation. And thirdly, the operators must be educated to use the equipment properly.

Most of the metropolitan areas have smoke control divisions which are active in this field. Their programs usually follow the same pattern. In order to know what kinds of equipment and controls are to be used, an installation permit is required. Next, all installations are inspected annually to see that the controls and auxiliaries are in working order. And finally, smoke inspectors make periodic neighborhood observations to determine whether firemen have been properly trained and are handling the job efficiently.

In order to provide the turbulence required for satisfactory combustion, it is frequently necessary to install overfire jets in coal-burning furnaces. These jets may be either steam or air jets. Their primary purpose is to produce proper mixing of the air and gasified fuel, which eliminates stratification. An excellent discussion of the subject has been published by Engdahl and Major.[1] With this program, the municipal air pollution control departments hope to minimize the smoke produced in our communities.

The incombustible residue carried by combustion gases is usually considered to be fly ash. The burning of coal in large furnaces is the principal source of fly ash. Incinerators, unless properly designed and equipped with collectors, also may be a source of fly ash. Burning of oil in industrial plants, and coal in domestic furnaces, produce little fly ash compared with power stations and steam plants.

One of the largest sources of fly ash is the central power-generating station. Many of these stations burn a thousand tons or more of coal a day. This coal contains from 5 to 15 per cent ash. Pulverized coal firing is almost universally used. Since the coal is burned in suspension, the ash has an excellent opportunity of going up the stack. Some of these furnaces collect a portion of the ash as a molten slag and so are called "wet bottom" furnaces. The new cyclone furnaces also remove much of the fly ash as a slag. Others, which do not, are "dry bottom" furnaces. It is evident that the amount of fly ash emitted from a plant will depend on the following factors: amount of coal burned, degree of pulverization, average ash content, wet or dry bottom furnace, and the nature and efficiency of the fly ash collector. All of these factors should be considered in designing a new plant for low fly ash emission.

The fly ash collectors most frequently used are mechanical collectors or electrostatic precipitators.[2] The former separates the solid particles from the combustion gas by centrifugal force. The equipment sometimes consists of many cyclones of small diameter. Another form uses a reversal of gas-flow direction to concentrate the particles into a small volume of gas which is recycled through a secondary separator. Still another uses the centrifugal force developed in the induced-draft fan for this separation. These mechanical collectors have the advantages of operating at relatively high temperatures, requiring only a moderate draft loss (1 to 3 in. of water), with low installation and operating costs.

Electrostatic precipitators are also used to collect fly ash. In passing through these collectors, the fly ash particles are charged by a very high voltage on a wire suspended between plates or within a pipe. These charged particles are attracted to the plates. The collecting plates are periodically rapped, and the dust falls into a hopper. Electrostatic precipitators are very efficient, especially when collecting very fine particles. Depending on the nature of

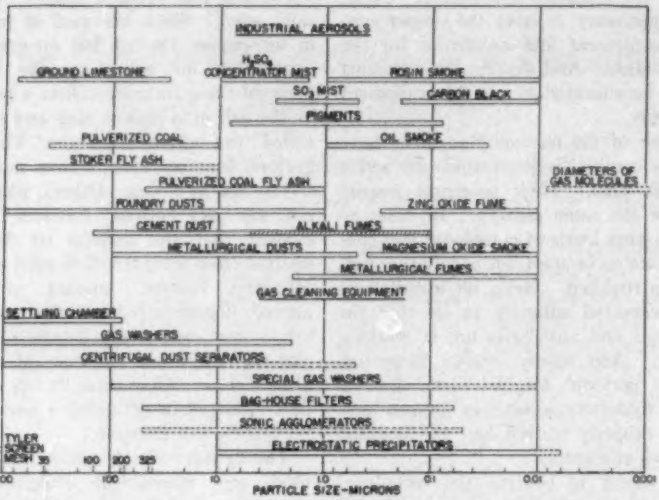

FIGURE 1—Particle Size of Industrial Aerosols and Equipment for Cleaning Gases

the dust, its concentration in the gas, and the velocity of the gas, these precipitators may collect from 85 to 97 per cent of the solids present. The draft loss through them is low, perhaps several tenths of an inch. The principal objection to this type of collector is its high installation cost, especially if it is desired to obtain the higher efficiencies mentioned above. In some locations, especially when dealing with very fine particles, the installation of electrostatic precipitators has proved to be the most nearly satisfactory solution.

The question to be answered, then, is how can the fly ash be economically separated from the combustion gases?[3] There is no universally applicable answer. The equipment to be used in each installation must be chosen on the basis of conditions surrounding the plant. If the coal is burned on grates, and the fuel consumed per square foot of area is not more than about 25 pounds per square foot per hour, probably no collector will be required. If the coal is burned in suspension and if the plant is in an urban area, it is probable that equipment may be required to collect the fly ash. In such cases, a small plant may find a mechanical collector satisfactory. In the case of large plants burning large tonnages of coal, a high efficiency collector is usually required.

PARTICLE SIZE AND AIR POLLUTION

There are three general divisions of air-borne contaminants, according to their particle diameter. The larger particles, above 10 μ (1 μ = 1/25,400 in.), have a strong tendency to settle to the ground. Smaller particles, below 1 μ, behave like aerosols and have little tendency to settle. Gases, such as SO_2, diffuse in all directions. The particle sizes of some common contaminants are shown in Figure 1.

In measuring dirt fall, it is customary to expose an open jar for 30 days in a location which is representative of a given area. A considerable amount of

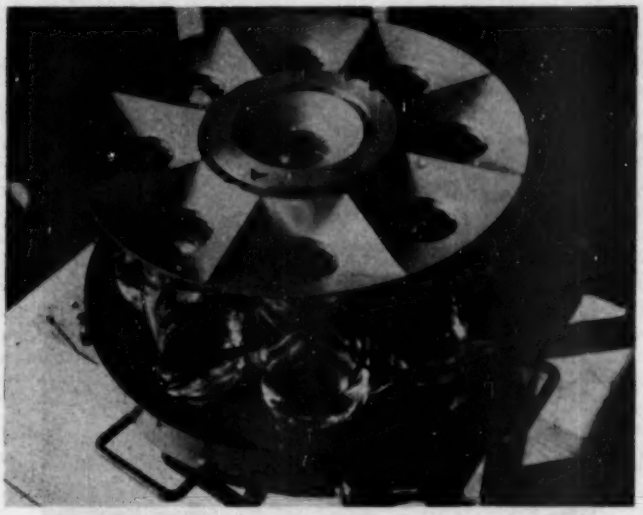

FIGURE 2—Directional Dirt Fall Collector with Cover Removed

work has been done in England on this subject.[4,5] Similar determinations have been made in many metropolitan areas of this country. It is agreed that there are many factors to be considered in order to successfully use this method of testing. Probably the most important of these is the selection of a truly representative location for the test jar. Also, the variation in weather conditions must be taken into consideration. Even though it is agreed that this is a rough test and that results must be averaged over several years to be significant, it is the only test that gives us a measure of the total dirt fall in a given area.

Usually, dirt fall samples have been collected in single containers. In one of the English reports, it was stated that: "It would be interesting to know the direction from which the dirt came as well as the total dirt fall." With this thought in mind, a new device called a directional dirt fall collector has been designed to increase the information secured by this test, as shown in Figure 2. It is seen that there are eight jars arranged in a circle, with a ninth jar in the center. These jars have metal funnels which collect the dirt not falling directly into the jars. At the end of the collection period, the dirt remaining in these funnels is washed into the appropriate jars. Over the top of the jars is a cover which has a hole in the center, and a second hole near the periphery and centered over the center line of the circle of jars, as shown in Figure 3. A closure is located and operated in such a way that either the center hole or the outer hole is always covered. As the wind changes, the wind vane rotates the cover until the hole is over the jar representing the new wind direction. An analysis of the relative amounts of dirt in the various jars will indicate the direction from which the wind was blowing when the major portion of the dirt fall occurred.

It is obvious that inaccurate results would be obtained if all of the dirt which falls during a calm period were allowed to collect in the jar correspond-

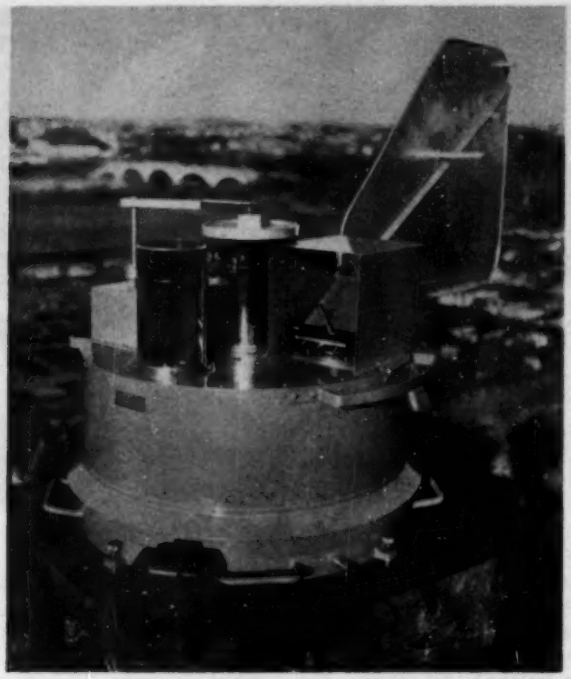

FIGURE 3—Directional Dirt Fall Collector Showing Operating Position When Wind Is Blowing in Excess of 3 Miles Per Hour

ing to the last direction from which the wind was blowing. To handle this situation, a vertical wind-sensitive vane, perpendicular to the rotating vane, has been installed. At wind velocities exceeding three miles per hour (or any predetermined velocity), the outer hole in the cover will be opened and the inner hole will be closed. When the wind velocity drops below three mph, an electrical contact is closed, which moves the cover, closing the outer opening and uncovering the central opening. During this calm period, the dirt is collected in the center jar.

It should be pointed out that, in interpreting the results from such dirt fall equipment, the number of hours during which the wind has blown from each direction must be taken into consideration. The results, therefore, are calculated in terms of the rate of dirt fall, or weight collected per hour for each wind direction. The total dirt fall in the area, of course, is the sum of the weights of dirt collected in the nine jars. It was decided to select three mph as as dividing line between directional and calm dirt fall, to correspond with the wind-velocity tabulation which is published by the U. S. Weather Bureau. This tabulation gives the total number of hours which the wind blows in various directions and also notes the number of hours during which the wind velocity has been below this value.

This directional dirt fall collector should be of particular interest and value in highly industrialized areas. By noting the direction from which the wind was blowing when most of the dirt fell, it should be possible to determine the direction from which the major contaminant came. This might be of special interest, for example, along a river to determine whether the contaminants were of local origin, or had been blown in from another community. With this new tool, it should be possible to identify the major sources of contaminants.

AEROSOLS

Most of the work in sampling air-borne contaminants has been directed toward the determination of the amounts and properties of aerosols present. Since aerosols of the proper diameter (0.1 to 0.7 μ) form smogs which reduce visability, they are of considerable interest in industrial communities. These sampling methods have been catalogued by Silverman.[6] With a knowledge of the particle size of the contaminant, the proper sampling method may be selected. These will usually be by centrifugation, filtration, electrostatic and thermal precipitation, or impingement. After the sample has been collected, the concentration and chemical properties of the contaminant may be determined by conventional methods.

Among the newer developments[7] has been an adaptation of the Venturi scrubber for collecting small amounts of air-borne contaminants from large volumes of air.

Neuberger[8] has shown the importance of condensation nuclei in the formation and persistence of smogs. Equipment designed by Vonnegut[9] is available which will determine continuously the number of such nuclei present in the air. A considerable amount of work has been carried on by the Stanford Research Institute.[10,11] Much of it has related to the sampling and identification of very small amounts of aerosols and gases in connection with smog formation and eye irritation.

The methods just described are primarily for the short-time sampling of aerosols. The Owens automatic aerosol filter[4] and its modification used by Davidson[12] are suitable for measuring automatically the amount of "dark" aerosol constituents in the air at regular intervals. A number of aerosol filters using tape filter paper for continuously recording the aerosol concentrations are available at the present time. Equipment for continuously measuring both "light" and "dark" aerosol concentrations in the air is in the design stage. Using these continuous aerosol collectors, it will be possible to obtain the variation of the total aerosols present throughout the day and night. It may also be possible to differentiate between the dark colored aerosols, which are tarry or carbonaceous particles, and light colored aerosols, which represent fly ash and similar materials. To obtain the most information from these continuous collectors, equipment should be used to correlate wind direction with aerosol concentration.

Current research is indicating the important nature of small diameter aerosols. In this field, special filtration technics may be used to indicate the total concentration present. Optical methods are being used to determine the particle size of homogeneous aerosols.[13]

The use of the ultramicroscope principle by Laskin[14] gives a fundamental method for determining the terminal velocities (particle sizes) of aerosol particles. It is becoming increasingly important to determine the range of particle sizes which various sampling methods will collect efficiently. With these new research tools, it will be possible to check one method against

another and improve the precision of this work.

GASES

The gases most frequently encountered in air pollution work are the sulfur-bearing gases. Equipment is available for measuring the concentrations of these gases continuously,[15, 16] or by means of portable equipment for field-work.[17] When other gases are known to be present, they may be collected and analyzed by conventional chemical methods.

In certain cases it has been found that gaseous contaminants, other than SO_2 and fluorides, are present which can cause plant damage.[18] Recent work reported by Larson[19] and Stanford Institute[20] indicates that aldehydes, organic acids, hydrocarbon vapors, and oxides of nitrogen have been identified in the Los Angeles smogs. These compounds are believed to result from automotive engine exhaust, incomplete combustion during incineration, burning of oil by industry and residences, and gasoline vapors from storage tanks and other sources.

Haagen-Smit's work reported at the XIIth International Congress of Pure and Applied Chemistry[21] indicates the probability that organic peroxides are responsible for both eye irritation and plant damage. These peroxides are formed by photosynthesis from aliphatic or olefine-type hydrocarbons in the atmosphere, with nitrogen oxides acting as a catalyst in the sunlight. Experimental work under controlled conditions have reproduced the objectionable characteristics of the Los Angeles smogs.

TOPOGRAPHY AND METEOROLOGY

In the dispersion of air-borne contaminants, topography plays a major role. Flat terrain, especially near the Great Lakes where strong winds are frequent, favors the rapid dispersal of aerosols and gases. Narrow deep valleys furnish pockets in which contaminants may collect to form relatively high concentrations. When the air at ground level is colder than the air above it, a temperature inversion is formed. Under these conditions, the air is stable, and there is little tendency to disperse contaminants by mixing. These temperature inversions are much more dangerous over an industrial area when it is surrounded by hills. During certain seasons of the year, radiation fogs in these areas may build up to such an extent that sunlight is unable to disperse them, As Hebley has pointed out,[22] the air, cooled by the radiation of the hillside to a clear sky, drains down into the valley and increases the intensity of the temperature inversion.

Most of the meteorological measurements above ground level have been made with instruments attached to fixed structures. During the war the Armed Services developed technics using kite-balloons for measuring temperature and humidity at altitudes up to 2,000 feet. Work at Oak Ridge[23] has refined this technic to record continuously the temperature up to 3,000 feet. These measurements are made by suspending a wiresond or thermistor from kite-balloons and bringing the electrical impulse to ground level to be measured or recorded.

Measuring the wind velocity at chimney-top level and higher is important in predicting the dispersion of gaseous contaminants. Until recently, these measurements could be made only from fixed structures or by using free balloons at altitudes of 800 feet and higher. A new technic,[24] using kite-balloons, permits the measurements of wind velocity and direction at various altitudes up to 500 feet and higher. A low velocity wind tunnel has been used[25] to investigate the roles that building design, stack height, gas velocity, and wind velocity play in controlling the path of smoke from the stack.

FIGURE 4—Smoke Grenade Fired at 380 Feet. Wind Velocity 9 Miles Per Hour

DISPERSION OF CONTAMINANTS AT LOW ALTITUDES

A number of methods have been developed for calculating the concentration of contaminants at various distances downwind from the point of emission.[26-29] Such methods for studying air pollution are particularly valuable where the terrain is relatively flat. In rough terrain where intersecting valleys complicate the situation, it is necessary to study the air-flow pattern at the actual site of the plant.

As a part of studies in the design of central power stations, the problem was presented of determining the height to which the stacks must be built in order to secure satisfactory dispersion of the gases. In order to study this condition, a plant was selected which was in rolling terrain with relatively low stacks. The objective of this work was to obtain data on the air flow in rough terrain and over an industrial building.

In carrying on this work, smoke grenades were raised to various altitudes above the plant by using a kite-balloon. Observations were made at a point perpendicular to the wind direction and several thousand feet away from the plant. From this vantage point, the path of the smoke from the smoke grenade could be observed and photographed. A smoke path at 380 feet above ground level is shown in Figure 4. As would be expected, the important factors were the wind direction and velocity.

It will be seen, therefore, that it is possible to study the path of the air stream over the tops of industrial buildings in rough terrain by firing smoke grenades at various altitudes and observing the path which the smoke follows under various meteorological conditions. These same technics[24] have been used for sampling gas and particulate matter at these same altitudes.

METHODS FOR REMOVAL OF CONTAMINANTS

A number of methods are in common use for reducing air pollution. These have been fully described[30, 2] in various

publications and symposia. To mention only a few, production of smoke may be reduced by proper furnace design and the use of overfire jets. Fly ash is frequently collected by mechanical and electrostatic collectors. Industrial dusts may be collected by these same methods and also by baghouses and various types of scrubbers. Organic compounds and odors are sometimes treated chemically, scrubbed with organic or inorganic liquids, or removed by heat and incineration.[31, 32] Hydrogen sulfide is being commercially absorbed by several alkaline organic solvents, followed by stripping the gas from the solvent, and a controlled catalytic oxidation to form elemental S.[33] High chimneys, to obtain a maximum dispersion of gaseous contaminants such as SO_2, have been found to be an economical method of reducing contaminant concentration at ground level.[34, 35] This list is not intended to be complete, but only to give an idea of typical methods which are used. The particle size of these dusts and the ranges over which collecting equipment is reported to be effective are shown in Figure 1.

The latest improvements in collecting equipment have been in the newly designed mechanical separators, both wet and dry, and the Venturi scrubber.[36, 37] Considerable work has been published on sonic agglomeration of contaminants in effluent gases.[38, 39] It has been found that some particles do not stick together after agglomeration. This method is not applicable to these materials. Different materials must be tested to determine their agglomerating characteristics. The separation of very small particles has been made possible by using them as nuclei in a steam condensation process.[40] The water droplets so formed are then separated from the gas stream in a conventional scrubber.

The greatest need of the present air pollution control program is to find lower cost methods for removing the smaller particles from effluent gases.

INDUSTRIAL APPLICATION

In discussing air pollution, one state official has said that most plants would be glad to install equipment to correct this condition if it were effective and practical. An industrialist has stated that the greatest drawback to more rapid progress in air pollution control is the high cost of collecting equipment. With all the knowledge available, one would think that the control of contaminants would be simple. A city official has indicated that little of this knowledge is practically usable for reducing the nuisance at a specific plant. With all of the methods available for approaching the air pollution problem, how are they to be applied to industry?

To those who have studied these problems, it is evident that each plant presents an individual research problem. The method for reducing contaminants must be tailored to fit the individual situation. The first information required is a knowledge of the physical and chemical nature of the contaminant, especially the particle size distribution. What concentrations of contaminants are found; what are the properties and compositions of the gases, and from what points do they leave the plant? Another important factor is the topography of the surrounding country and locations of population centers and farms. Of equal importance are the meteorological conditions under which contaminants are found to be objectionable. The potential market for the material separated is important. With this information available, it is possible to determine the equipment which will reduce the contaminants with the lowest cost. It is evident that this must be a plant-by-plant analysis to obtain the most economical control of these contaminants.

The same factors must be studied for a community or metropolitan area as for

a single plant. Here the problem is made more complex by the many sources of contaminants and by the fact that study of contaminants in the air must be three-dimensional. Many of the newer technics are directed toward solving this type of problem. Even in a community survey it is necessary, after studying the over-all conditions, to work out the details of reducing air contaminants, plant by plant.

COMMUNITY ASPECT OF AIR POLLUTION

In carrying on the drive for cleaner air, the municipal and county programs in each industrial center actually form the backbone of air pollution control.[41] Each company within that area should work out its own program in coöperation with the local air pollution control engineer. By such joint effort, founded on mutual respect, we can expect the greatest results with a minimum of effort and cost. There is little excuse for any installation having smoke pouring from its stacks. Much information is available on fly ash removal. With the equipment now on the market, most of the fly ash nuisance problems can be solved.

There are many other industrial dusts, fumes, odors, and so forth, which must be handled. As mentioned earlier, these problems must be analyzed, individually, to find the most economical method for reducing the air contaminants to a reasonable level. If available information is not adequate for the problem, additional research work may be required. This research may be to find an economical method of collecting and disposing of the contaminant, or it may even be to find a new method for producing the product, which does not form the noxious contaminant.

Finally, the future success of air pollution control rests on the education of all the segments of society regarding the facts involved in this problem. But who pays for cleaner air? It has been pointed out many times that it is the public who is going to pay for the cleaner air that it breathes. Progress in this work will be slow. The public cannot expect the air pollution of any community to be eliminated in a year—probably not even in 10 years. It will take patience, hard work, and the application of our increasing knowledge to make the improvement. It will take constant vigilance to maintain the cleanliness of the air. Only by the cooperative effort of the public health and air pollution control officials, industrialists, engineers, and research workers will this goal be attained.

SUMMARY

Air pollution may be approached from two points of view—public health or engineering. The maximum permissible concentration of many contaminants which will be harmful in the community is not clearly established. Technology is available to practically eliminate smoke and handle most of the fly ash problems. Each plant industrial problem must be analyzed individually to secure the most economical solution to the problem. A great deal of information is available as a guide in sampling and analyzing air contaminants. The newer technics make possible the determination of the concentration of air contaminants at various altitudes as well as at ground level. Meteorological observations at chimney-top level and higher are important. A new continuous aerosol analyzer and a dirt fall collector indicate the wind direction from which the largest amount of air contaminants is coming. A low velocity wind tunnel, condensation-nuclei recorder, miniature Venturi scrubber, and other equipment are being perfected to furnish specific information.

Close coördination between the public health and air pollution control officers, industry, and research organizations is required for the most rapid

progress. Education of all parties concerned will be necessary. With a cooperative effort, progress will be made, and the air will gradually improve as additional equipment is perfected and used.

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Methods of Predicting Total Cases of Poliomyelitis During Epidemic Periods*†

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AN interesting statistical problem, with potential value to administrators and scientists who work with poliomyelitis, is found in assessing the epidemicity of the disease and in estimating total cases expected to occur during a year.

References to methods of forecasting epidemicity of poliomyelitis are rarely found in the literature. Bundesen, Fishbein, and Golton[1] suggested the feasibility of predicting cases of poliomyelitis in epidemic years; Rich and Terry[2] presented control chart technics for apprehending epidemicity; Hemphill[3] described methods of preparing estimates of the expected number of reported cases during epidemic periods.

This presentation gives brief consideration to some statistical approaches which have been found useful in:

1. Appraising impending epidemicity of poliomyelitis.
2. Making estimates of total cases to be reported during a year.

Results of a few forecasts are given, although an evaluation of the results is beyond the scope of this report.

SOURCE OF DATA AND DEFINITION OF TERMS

Throughout this discussion "cases" refers to "reported cases." Data used are those reported by the state health authorities to the Public Health Service of the Federal Security Agency. This paper treats only of short-range predictions, i.e., those made within a year or made within that portion of a year wherein the majority of cases have been observed to occur from study of the reported cases of poliomyelitis during past years. This limited period of the year, in which the majority of cases is expected to occur, is referred to hereinafter as the "expected epidemic period" of the year. These expected epidemic periods vary from state to state and from locality to locality. "Epidemic" in this paper means an unusually large number of cases for a given area as shown by study of the past history of reported cases of poliomyelitis in that area; it is not defined in terms of rates per population unit.

An "epidemic period" for an area is interpreted as being a time period of consecutive weeks in which an arbitrarily selected low number of cases for the area (endemic level) is exceeded each week by the current reports from the area.

"Control chart" and "control limit" are used with the same meaning which is generally applied to these terms in the field of quality control in manufacturing processes. The "control limit" is used to interpret events which fall beyond it as having some special statistical significance. "Control" in this presentation should not be confused in any sense with control of poliomyelitis as a disease.

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NATURE OF DISTRIBUTION OF WEEKLY REPORTED CASES

Poliomyelitis has been recognized as a specific entity for only a relatively short while. The general nature of the distribution of total reported cases of poliomyelitis, by years, in the United States, reveals no cyclic trend (Figure 1). Similarly, the annual data of states rarely show cyclic trends. However, graphs of reported cases by weeks for the nation, any state, or any populous local area, display distributions of recognizable similarity for the years of greatest total cases. These distributions for the epidemic years graph as asymmetrical bell-shaped curves as shown for the United States in Figure 2. In any area, the epidemic periods, which come at unpredictable yearly intervals,

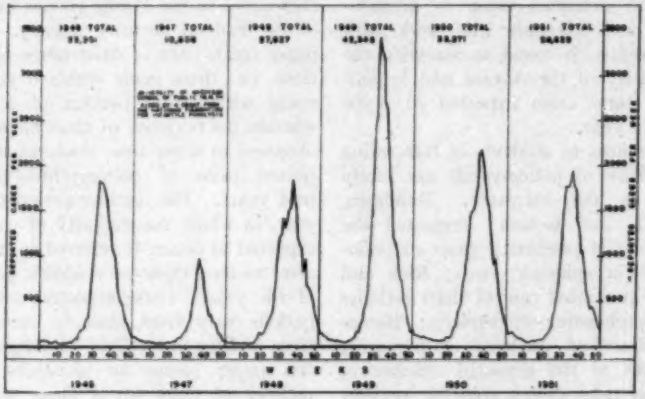

FIGURE 1—Reported Cases of Poliomyelitis by Weeks—United States—1946-1951

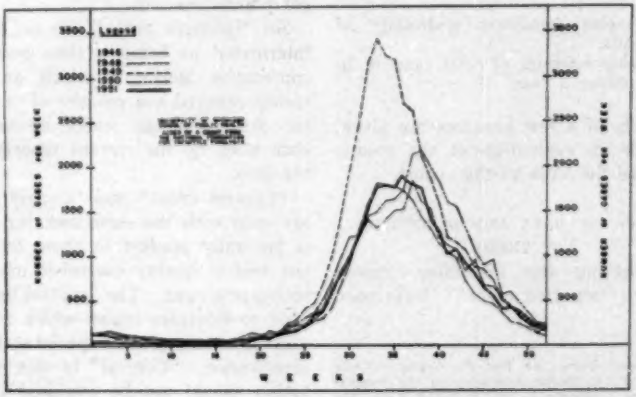

FIGURE 2—Major Epidemics of Poliomyelitis. United States—Reported Cases per Week—1946, 1948, 1949, 1950, 1951

are usually sharply concentrated within a specific season. Generally, the years which have produced epidemics of unusually high proportions show an accelerated incidence of reported cases a few weeks earlier than the years which show low epidemicity. Case reports during these massive (major) epidemics tend to rise sharply from week to week to a peak and recede therefrom by weekly decrements, forming a bell-shaped distribution curve with the longest tail toward the decrement side of the distribution (positive skewness, statistically). Endemic patterns of distribution of cases by week for a given area often approach symmetry of distribution, sometimes being negative in skewness.

Studies of these characteristics are easily established for state and local areas by collecting data of reported cases by weeks for several previous years and using simple smoothing devices such as a three-week or five-week moving average. In the examples presented herewith the five-week moving average was used. (Figures 3 and 4). Vagaries of our reporting system and perhaps the nature of occurrence of cases of poliomyelitis in local areas, indicate that such smoothing technics tend to be more characteristic of the epidemic distributions than are the data as reported.

Data of past years for an area may be smoothed and an arbitrary minimum number of cases per week selected as representing an "endemic" level for the area. Data for those consecutive weeks during which this endemic level is surpassed form distributions which are easy to study and from which descriptive constants can be calculated for comparative purposes.

METHODS OF ASSESSING LEVELS OF EPIDEMICITY

Figures 3 and 4 show control charts for the United States and Michigan. These control charts were used in assessing epidemicity during 1950. The theoretical distribution of Figure 3 is composed of the data of 1946 averaged with the data of 1948 by weeks from the 21st week through the 52nd week

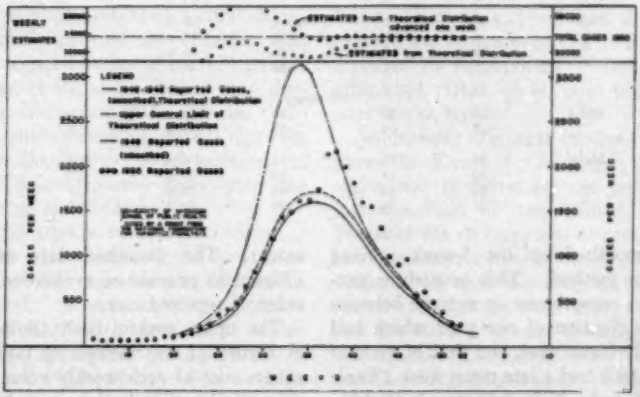

FIGURE 3—Control Chart for the Evaluation of Epidemics of Poliomyelitis and Weekly Estimates by Area—Proportion Method—United States—1950

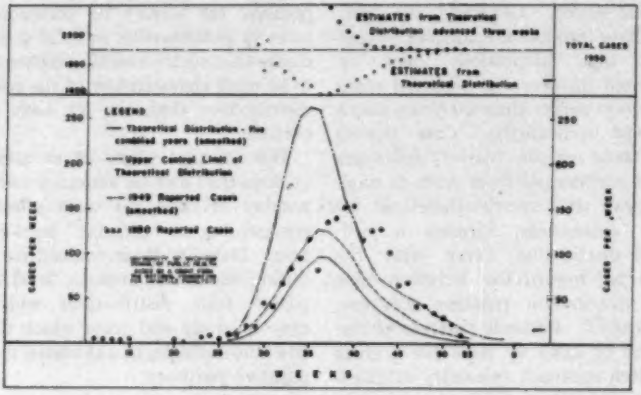

FIGURE 4—Control Chart for the Evaluation of Epidemics of Poliomyelitis and Weekly Estimates by Area—Proportion Method—Michigan—1950

TABLE 1

Characteristics of Selected Epidemic Periods of Poliomyelitis in the United States and Michigan 1943–1950

Year	Type of Epidemic	Beginning Week	Range in Weeks	Mean Cases Per Week	Mean Week of Year	σ (Weeks)	Skewness (α_3)
			United States				
1943	Minor	30	15	632	36.6	3.6	0.1
1944	"	29	18	940	36.9	4.7	0.2
1945	"	29	17	644	35.6	4.5	0.1
1947	"	33	12	605	37.6	3.9	0.3
1946	Major	27	21	1,066	35.8	4.7	0.3
1948	"	26	25	1,012	37.2	5.7	0.2
1949	"	26	25	1,579	36.1	5.2	0.4
1950	"	25	26	1,166	37.1	5.7	0.1
			Michigan				
1947	Minor	28	27	23	38.1	4.7	0.9
1948	"	26	29	26	37.6	5.3	0.4
1944	Major	27	26	34	36.8	4.3	0.6
1946	"	26	34	32	38.0	5.9	0.6
1949	"	23	46	64	36.6	6.2	1.3
1950	"	22	40	49	39.3	6.0	0.4

and smoothed by the 5-week moving average method. This procedure produced a compromise or average between the distribution of one year which had an early mean week and that of another year which had a late mean week (Table 1). For the United States, both 1946 and 1948 had total reported cases of the same general magnitude (25,000–28,000 cases). The smoothed data of 1949 (Figure 3) provide an evaluation of the order of reported cases.

The upper control limit (dotted line in Figure 3) was formed by taking the square root of each weekly value of the theoretical distribution, multiplying this root by three, adding this product to the theoretical weekly value and,

finally, connecting these calculated points. This procedure produces a distribution which hoods the theoretical distribution. However, it approaches the theoretical distribution more closely on the tails than in the middle portion of the theoretical distribution. In other words, it sets a limit of expected variation by chance fluctuations in reported cases. In so doing, the limits are smaller when reported cases are fewer, and the limits expand with the period in which reported cases are greater.

The theory which suggested this method of constructing the upper control limit came from concepts of the Poisson distribution wherein the mean occurrence is equal to the variance (σ^2).

A method was sought for establishing an expected chance variation by which observations of current reports might be oriented and which might be used effectively for the reports of each week of the expected epidemic period of the year. For this reason, three times the root of each weekly value of the theoretical distribution was added to the weekly value to establish an expected upper limit. More exact mathematical evaluation of confidence limits for events numbering 1–50 have been tabulated by Ricker.[4]

For similarly prepared control limits, Hemphill[3] reported the criterion that two successive weeks of current reports in excess of the upper control limit during the increment phase of the theoretical distribution indicated that the current distribution would terminate in having more reported cases than the theoretical distribution.

As the weekly reports of 1950 were received and recorded as shown in Figure 3, this criterion was met in the 26th week. Acceptance of the criterion signaled that more than 25,500 cases should be anticipated during the last 6 months of 1950—or a total of at least 27,000 reported cases for the calendar year—since 1,700 cases had accumulated through the 19th week of 1950.

Thus as early as the 26th week of 1950, it was indicated that reported cases would exceed 27,000. Moreover, it was concluded that a total of 43,000 cases as in 1949 would not accrue, since the trend of 1950 during the expected epidemic period of 1950 was beginning at a level much below that of 1949 as shown in Figure 3.

Week by week the reported cases from the 26th week through the 36th week of 1950 form a good fit with the chosen theoretical distribution (see Figure 3). There is evidence of a divergent trend from the theoretical pattern in the 37th week which is accentuated in the 38th week, and it may well be concluded that (a) 27,000 cases would be exceeded by more than had been expected prior to the 38th week, and (b) the mean week of the 1950 distribution could be expected to fall later in the calendar year than that of the theoretical distribution. Thus, at the 38th week it was indicated that the selected theoretical distribution would fit better with the current 1950 data if the theoretical distribution were shifted toward the end of the year.

Practicable limits of expectancy of total cases may be determined in this manner, but the control chart does not provide an estimate of the total cases expected to be reported. Methods of estimating total cases are presented later in this report.

An example of a state control chart is shown in Figure 4 (Michigan, 1950), which was prepared by the procedure just described for the United States. The criterion of being out-of-control for two consecutive weeks was not met during 1950 until the 39th week. Reported cases of the 38th week signaled that the 1950 data were diverging from the theoretical distribution. Consequently, a mean week could be expected later in the calendar year than that indicated by the theoretical distribution with a total well above that of the theo-

retical distribution. Moreover, the 1950 total should not closely approach the 1949 total. Data for the following weeks of 1950 bear out these forecasts (Figure 4).

This method does not allow the investigator to predict accurately the late mean week of the Michigan, 1950, distribution (Table 1). However, it does allow for a rapid readjustment of the basis of prediction as a change in trend develops within an epidemic period. These adjustments may be likened to changes necessitated in forecasting weather phenomena from changes in barometric pressure. Adjustment of the mean week of the theoretical distribution to a later calendar week, in an attempt to superimpose it over the mean week of the current distribution, brings the proportionate parts or areas of the respective distributions into realistic relationships. This adjustment provides a means of forecasting total cases with improved accuracy.

Choice of data for constructing theoretical distributions by this method is arbitrary. The flexibility of the method allows the investigator to select one or more theoretical distributions which are similar to the available current data, thereby evaluating the general level of current epidemicity and limits of total cases expected. This is an empirical approach which is usable in establishing broad levels of epidemicity and rough limits of expected total cases.

METHODS OF ESTIMATING TOTAL CASES

Reference has been made above to characteristics and statistical constants from past data which may assist in prediction of total cases for an area. One observable phenomenon, valuable for most areas, is that of the calendar weeks of the year in which previous epidemics have displayed their beginnings. From Figure 2 it is indicated that major epidemic periods for the United States usually have shown marked divergence from endemic levels between the 20th and 26th weeks. This observation suggests that estimates of total cases for the ensuing epidemic period should be feasible by the 26th week, if the current trend is similar to that of past epidemic periods.

For purposes of predicting total cases to be reported during an impending epidemic period, the following statistical constants derived from past epidemic periods are useful:

1. mean week
2. standard deviation (weeks)
3. skewness

Table 1 shows the beginning and ending weeks of epidemicity and the calculated statistical constants of selected epidemic periods of the United States and of Michigan. Consistency is shown in the mean week and in the standard deviation for each area for the years selected. This consistency indicates that these distributions may be related to some general mathematical distribution such as the logistic or the Pearsonian distribution.

These data do not approximate the logistic distribution closely enough to assure acceptable results. No system has been devised for making estimates by logistic theory early in an epidemic period. However, the data of many of these selected epidemic periods approximate a Pearson Type III distribution having approximately the same statistical constants of mean, standard deviation, and skewness as computed from data of the epidemic period. Consequently, a method was devised of estimating total cases by this relationship.

A. Estimation of Total Cases from Pearson Type III Relationships

Carver's[5] *Mathematical Statistical Tables* provide ordinates of Pearson Type III distributions of skewness 0–1.1. Many statistical texts illustrate methods of superimposing normal distri-

butions over observed data. The method described by Walker[6] was changed algebraically to the form:

$$N = \frac{SY}{ui},$$

where, N = total expected cases,
S = standard deviation (derived from past years' data),
Y = number of reported cases in week (X),
u = ordinate value of Type III (Carver's Tables),[5]
i = interval of one week.

Results of the application of this method to data of the United States and many of the states have indicated that: (a) calculated estimates of total cases from ordinates at extremes of the distributions are often unusable; (b) reasonable estimates usually result from ordinates of the central area of the distribution; (c) estimates approaching the eventual total for the current epidemic period result when the mean week is adjusted toward coincidence with the mean week of the current data; (d) best results accrue when the selected constants of mean week, σ, and skewness compare favorably with the respective constants of the current distribution; (e) expected estimates of the descriptive constants may be calculated from data of past years, but there is no assurance that these estimates will be approximated by the current data; (f) smoothed data may be used or descriptive constants calculated from the theoretical distributions of control charts, or both; (g) variations of this application may be constructed; however, three descriptive constants (mean week, σ, and skewness) must be estimated or assumed; (h) this method does not assure convergence of estimates toward the eventual total as epidemic periods terminate.

B. Estimating Total Cases by Proportionate Comparison of Theoretical and Current Distributions

Observation of relationships between selected theoretical distributions and current distributions in many control chart studies suggested calculating estimates of total cases of current distributions by a simple proportion, as shown below.*

Results of estimates by this method are plotted in Figure 3, for the United States (1950) and in Figure 4, for Michigan (1950).

This empirical method of making estimates is easily applied. Resulting estimates are relatively consistent with eventual totals provided the current distribution is distributed by per cent of the current total approximately as is the theoretical distribution. For conditions where current data deviate from the theoretical, adjustment of the theoretical distribution may be made to improve the estimates (as shown in the plotted estimates of Figures 3 and 4).

Experience with this method on data of past years rapidly increases efficiency of its application and confidence in its results. This method provides estimates which converge toward the total reported cases as epidemic periods terminate.

* (a) Cumulative cases to week "X" (theoretical distribution) / (b) Total cases (theoretical distribution) = (c) Cumulative cases to week "X" (current) / (d) Total cases (current), then,

$$d = \frac{bc}{a}.$$

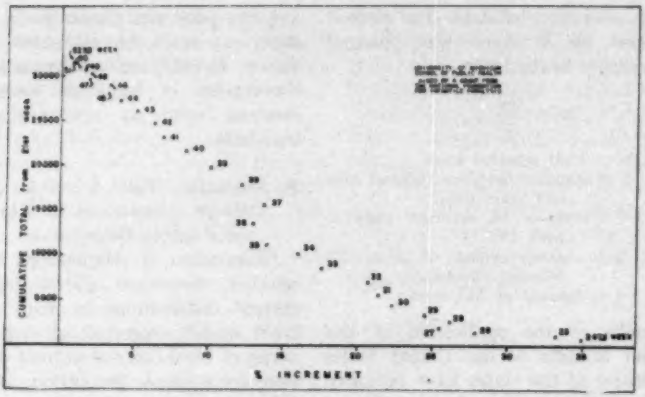

FIGURE 5—Weekly Increment as a Per cent of Weekly Cumulative Total of Reported Poliomyelitis Cases—United States—1950

C. Cohen's Method of Estimating Parameters

Cohen [7] (1951) presented methods of estimating parameters of Pearsonian distributions. Limited experience with application of the method indicates that it is not efficient in producing estimates approximating the total cases early in the current epidemic period. Additional study is needed for complete evaluation of this method.

D. Prediction of Total Cases by Percentage Increment

Figure 5 shows an application of the percentage-increment method. Cases for each week (X) are expressed as a percentage of the cumulative cases from some selected beginning date through week (X). These percentages are plotted from week to week on the abscissa of arithmetical grid paper and with appropriate ordinate values for the cumulative cases through week (X). A trend line develops which may be extended to intercept the "Y" axis, thus producing an estimate of total cases. Multiple lines estimating the trend may be constructed. These multiple lines may be drawn to produce estimates, say, of maximum, minimum, and most probable estimates. Trends often develop too late in epidemic periods of poliomyelitis for satisfactory estimates to be made by this method. However, in later stages of epidemic periods the method becomes quite definitive and assists in checking estimates from other methods.

SOME RESULTS OF ESTIMATING TOTAL CASES

These empirical methods are not subject to mathematical computation of their expected errors of estimate. Furthermore, acceptable standards of accuracy are unknown. Probably greater tolerance of error would be acceptable early in epidemic periods rather than in later stages. A recitation of some experiences follows to give an idea of the deviation of estimates which may happen.

Application of the proportionate method to data of the United States in 1950 produced weekly estimates from the 29th week to the 51st week, a few of which were in error by as much as 20 per cent. Using these methods, plus past experience, weekly estimates of the United States total cases for 1951 were

all within 2 per cent of the eventual total from the 28th to the 51st week. All estimates for Oklahoma were within 5 per cent of the total during the epidemic period of 1950. Virginia's total was estimated within one per cent of its 1951 total on all estimates. Early estimates for Delaware in 1951 were in error by 400 per cent; its total cases numbered 14.

Estimates for states tend to be more erratic than those for the United States. Percentage error of estimates from the state totals tend to be greater for the less populous states than for the states with large populations. Experience with these methods of forecast, with over 2 years' data of all the states, demonstrated that the percentage of error was less than 20 per cent by the 36th week each year for about 30 of the states and that approximately 40 of the states' estimates were within 20 per cent of their respective totals by the 40th week of each year. Generally, experience has shown that total cases of relatively massive epidemics can be forecast by states within 10–20 per cent of the eventual total by the time the mean week of the current epidemic has occurred. Estimates converge toward the total during the weeks following the mean week. Exceptions will occur.

Prediction involves error. Ask the weather forecaster or selected directors of public opinion polls.

SUMMARY

A. Selected descriptive statistical constants of distributions of weekly reported cases during epidemic periods of poliomyelitis have been shown to be consistent for specific areas.

B. Empirical methods of predicting epidemicity of poliomyelitis for specific areas have been presented. These methods have been presented for the following purposes:

1. Assessing levels of impending epidemicity.
2. Estimating total cases to be reported within a year.
3. Evaluating changes of trend which develop within an epidemic period.

C. Results of weekly forecasting of total cases for the United States beginning with the 29th week showed:

1. Divergence of estimates as great as 20 per cent from the 1950 total.
2. All estimates within 2 per cent of the 1951 total.

D. Estimates of state totals have generally been within 20 per cent of their respective totals by the time of the mean week of their epidemic periods.

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Local Hearings for President's Commission Scheduled

It has been announced that "grass roots" hearings of the President's Commission on the Health Needs of the Nation will be held as follows: Philadelphia, Pa., August 11; Dallas, Tex., August 18; Raleigh, N. C., August 25; Minneapolis, Minn., September 22; St. Louis, Mo., September 15; Cleveland, Ohio, September 22; Detroit, Mich., September 23; and San Francisco, Calif., September 29.

Temporary Disability Insurance*

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IN this day of uncertain international developments, outright war, the continued creation of new devices for wholesale destruction of man and his works, and other signs which tend to point to a gloomy future, it is easy to overlook entirely the indications which herald an optimistic, rather than a pessimistic, time ahead of us.

Despite the omens, there is cause for cheer. You may have noted a recent editorial in one of our largest national magazines which said that notwithstanding the woes of the present, the future gives every promise of exceeding anything the past or present offers in material and cultural wealth. This editorial predicted that gains to the good during the next 75 years would be as great as they have been during the past 75 years, probably much greater.

It is true that great advances are in the making—great scientific advances and great sociological advances. One field in which we have advanced most rapidly during the second quarter of the century—and in which we are continuing to advance—is in the field of employment security. It is my belief that our continued progress in the over-all field of employment security as such will have a great deal to do with our realization of the potential which the future offers.

Protection of members of the labor force during periods of temporary disability is fundamental to an employment security system. Workmen's compensation has long been accepted as an essential in our economy. More recently, unemployment insurance came into being as an additional protection for the work force.

It is singular, however, that we evolved a system to alleviate the hardship of the able-bodied unemployed worker before we adopted a program to lessen the hardship of the worker who suffers a wage loss because of nonoccupational injury or illness.

Perhaps the answer lies in the fact that unemployment insurance itself originated as disability insurance in one sense—state unemployment insurance systems came into being as we battled to curb a nation-wide economic illness—the depression of the 1930's. At that time, combined wage losses from the depression's collective economic illness was a greater menace to our well-being than the wage losses from collective physical and mental disabilities.

As our unemployment insurance system developed and it became doubly clear that it is a practicable program in the public interest, our thoughts turned to an expansion of social insurance which would bridge the gap of no protection for the worker who suffered a wage loss because of nonoccupational illness or injury.

Today, California and three other states are operating disability insurance systems. These four states have little in common in geographic size and only two of them have comparable populations, but they do have one thing in common—in each instance, industry is highly significant in the state's economy.

* Presented before a Joint Session of the Industrial Hygiene and Medical Care Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 2, 1951.

Rhode Island was the first state to incorporate disability insurance into its employment security system. Rhode Island administers its program through the same agency which administers its unemployment insurance system. Rhode Island also operates under a state monopoly; that is, the state is the only insurer. It does not permit contracting out through private insurance carriers.

California, the second state, and the first large state to enact a disability insurance law, likewise administers its program through the agency which administers unemployment insurance—the State Department of Employment. It does so through its Division of Disability and Hospital Benefits. Unlike the Rhode Island law, the California law, Article 10 of the California Unemployment Insurance Act, provides for contracting out through private insurance carriers. There are approximately 37,500 voluntary plans in force in California at present and they insure slightly more than 50 per cent of the state's covered workers. The remainder are insured through the State Disability Fund, directly administered by the Department of Employment.

New Jersey's program parallels California's, with one exception. The New Jersey law provides for an employer contribution. This is the case in no other state.

New York's program is fundamentally different. Administration is through the agency which administers New York's workmen's compensation statute. The program is primarily through voluntary plans—that is, the insured are insured through private insurance carriers. The only exception is the unemployed sick—persons who are out of work and looking for work when overtaken by disability. Insurance is paid to this group through a special state fund, created by a temporary tax and maintained by assessments against insurance carriers.

Which is the best system? Which offers the worker the best protection at the least cost? Which is the better administrative process—through unemployment compensation agencies or through workmen's compensation agencies?

Time alone can answer those questions. We are fortunate in having systems of state monopoly, private insurance carrier monopoly, and combinations of the two, with no monopoly, in operation in the early stages of disability insurance experience. We likewise are fortunate in that we shall be able to observe and evaluate two administrative approaches.

Out of this varied experience will come future guideposts for legislators and administrators. The result is bound to be progressively better disability insurance systems.

California's disability insurance program is financed entirely by taxes on employees' wages. This tax is the one per cent wage-earner contribution which formerly went into the state's unemployment fund. The unemployment fund is maintained by a payroll tax paid by employers—the same tax which employers paid prior to inception of disability insurance. There has been no increase in either tax as a result of diverting the wage-earner contribution to the disability fund.

What we have done is to establish an alternate benefit program. If a person is unemployed, he must show that he is able to work, available for work, and willing to accept suitable employment in order to qualify for unemployment insurance benefits. If a person seeks disability insurance, he must establish that he is not able to work and that his unemployment is the result of a nonoccupational disability which prevents him from working.

But although the difference between the two insurance programs can be stated as simply and clearly as that, any

number of questions arise immediately when one considers a temporary disability insurance law which will complement an unemployment insurance law.

Should the unemployment insurance base period, benefit year, and benefit formula concepts be used without revision? Should duration of disability benefits be affected by the amount of unemployment insurance a claimant draws in a benefit year? Will all kinds of physical and mental disabilities be recognized and insured? And exactly what is a disability—how severe must it be to justify payment of insurance? Should benefits be paid during periods of paid sick leave? Exactly what form of medical substantiation should be required—and is evidence of disability to be confined to medical evidence? What healing professions should be recognized—and, for that matter, what *are* the healing professions?

And the question of whether "contracting out" will be a part of the system has to be resolved.

As mentioned before, California has followed the basic unemployment insurance framework as to qualifying wages, length of base period, and duration of benefits. Despite arguments of some that there is no relationship between economic unemployment and unemployment because of sickness, this framework has served us well.

We have modified it to some degree for disability insurance adaptation. Initially, it was contended in some quarters that 26 weeks of unemployment insurance, and a separate 26 weeks of disability insurance, would prove too great a temptation to malinger. Actually, our experience has been that this danger is not nearly as great as originally feared. The number of persons who suffer spells of unemployment and sickness in a single benefit year is relatively small.

Initially, our law provided that if a person drew both unemployment and disability benefits in a single benefit year, his maximum benefits for both types would be one and one-half times the maximum for either.

In 1949, our law was amended to provide a separate 26-week duration for each type of insurance. The change was a result of the financial condition of the disability fund which permitted this liberalization and other liberalization which I shall discuss presently.

In determining what kinds of disabilities should be covered, we decided to insure against any disability which would prevent a person from performing his usual and customary work. The only disability excluded by the California law is pregnancy. In view of the fact that the disability fund is highly solvent, some feel that pregnancy should be covered and bills to so amend the law have been introduced into the legislature, but such legislation has not been enacted.

The California law covers mental as well as physical disability. Ordinarily, benefits are paid to persons committed to mental institutions. We have, however, refused to pay benefits to sexual psychopaths committed to mental institutions by court order following conviction of crimes.

We do not insure against industrial injuries or occupational diseases covered by the state Workmen's Compensation Act. When disputes occur as to whether an illness or injury is occupational or nonoccupational, we pay disability benefits and file a lien against the workmen's compensation carrier. If it is determined ultimately that the disability is industrial, we recover the payments we made. This system permits speedy payment of benefits to the worker who needs what he has coming, regardless from what source he should be paid.

Originally, our law did not permit payment of disability insurance to a worker who received sick pay from his

employer or continuance of his regular wages in any form during a period of disability. The exception was that if such regular wages did not equal the worker's disability benefit amount, we would pay the difference.

Effective January 1, 1952, however, the law will permit payment of disability insurance and regular wages under the following formula: The amount of regular wages received and the amount of disability insurance received may not exceed 70 per cent of the full wage for the most recent job that the worker was performing.

Again, we have liberalized our law in terms of what solvency of the fund appeared to justify.

The California law requires a seven-day noncompensable waiting period for each spell of disability. This excludes short-term disabilities which result in a brief wage interruption rather than a material wage loss.

Nothing is more important to a successful disability insurance system than valid evidence that a disability exists in each instance. The California act provides for medical certifications by physicians and surgeons. It further provides for such certifications by osteopaths, chiropractors, dentists, and chiropodists acting within the scopes of their licensed professions.

And at this point I wish to acknowledge the splendid coöperation the program has received from these professional men.

Administration of our program is by laymen *guided by necessary technical* advice from agency medical doctors. These laymen and women were chosen carefully, not only for their excellence as employment security administrators, but for qualifications of personality and temperament.

We reinforced our lay staff with a medical director highly regarded by the medical profession throughout our state, and he in turn selected two assistant medical directors of the highest professional and personal caliber. Our medical staff has represented the program and its administrators to the medical profession and it has represented the medical profession to our lay staff in the over-all interests of a practicable, equitable disability insurance system. The training of our examiners in medical interpretation and in the significance of individual medical reports is pursued as a major constant effort by the medical staff.

Truly, the healing professions in California have put their shoulders to the wheel in behalf of making the program enacted by the legislature accomplish its objective. Whatever success we laymen may have enjoyed as administrators is largely the result of the unreserved coöperation we have received from those upon whom we depend for medical evidence in substantiation of disability insurance claims.

A point of specific interest in this connection is administration of the program through "independent medical examinations." An independent medical examination is one which the department arranges on its own initiative—an examination by a doctor other than the doctor supplying the original medical certification. Such additional medical evidence often is necessary and desirable in determining exact natures of disabilities and probable durations of disabilities. Such supplementary "independent" examinations are desirable in certain cases from a standpoint of sound administration and proper review of a claim in the claimant's own interests. The import of "independent" should be explained. When the agency calls for an examination by a doctor other than the claimant's certifying doctor, it calls upon a medico who is entirely unprejudiced, unbiased, uninfluenced, and impartial. The name of the doctor is drawn in a normal orderly sequence from a "universal" list made

up of any and all reputable doctors who are licensed and have voiced a desire to serve as a medical evaluator. We use no "closed panel."

First to affirm this concept was the medical profession itself. And doctors throughout the state, overworked though they are, nevertheless invariably have found time to serve as independent medical examiners and have given liberally of their time and knowledge in support of sound administration of the program. This has been true of general practitioners and specialists of every sort.

Related to such examinations, though not medical in any sense, is the field visiting program carried on continually by the administrative staff. Our examiners get into the field and call upon claimants in the course of establishing claims and paying claims.

The claimant provides medical certification through his doctor, but it is the claims examiner who must make the determination that the claimant is or is not disabled within the meaning of the law. This field visiting program, therefore, is directly related to the claims examiner's responsibility. It likewise affords the department opportunity to give the disabled person, who cannot make personal contact with the department, direct information on his rights and responsibilities under the law.

The California law also makes provision for certificates by practitioners for those whose religious faiths require dependence solely upon prayer and spiritual means for healing. Percentagewise, the number of persons in the populace who depend solely upon prayer and spiritual means for healing is very small. And the number of persons who submit disability insurance claims supported by practitioners' certificates likewise is very small.

As mentioned in the foregoing, the California law provides for "contracting out"—through voluntary plan insurance with private carriers.

Voluntary plans may be substituted for state coverage under certain conditions. Principal conditions are that the plan must afford more favorable rights—at least one more favorable material right—to the insured employees than does the state system, and, all other rights the employee enjoys under the voluntary plan coverage must equal those which he would automatically have were he covered by the state plan; it must be available to all employees in the establishment insured; and it must not require from the employees contributions for disability insurance coverage greater than the one per cent of wages required by the state fund. Private plans may be either self-insured by the employer or carried by an insurance company. Such plans must have Department of Employment approval before they may be offered to employees.

When an employee leaves a voluntary plan he becomes covered under the state plan, and such coverage continues as long as he has a base period with sufficient subject wages or until he again becomes covered by a voluntary plan. Voluntary plans also share the cost of benefits under "extended liability." Extended liability is the liability for benefits paid to persons who are already unemployed when their disabilities begin and at that time are paying contributions neither to the state disability fund nor to a voluntary plan.

As I indicated at the outset, I offer no brief for state monopolies, compulsory insurance under voluntary plans, or combinations of the two, as we have in California.

I merely repeat that what the labor force is interested in receiving and is entitled to receive is the best possible protection at the least possible cost.

So far, I have not mentioned one of the most important components of California's disability insurance system. It is the payment of hospital benefits. Our

hospital benefit program represents significant liberalization. In this connection, it is understandable that California, the first large state to enact a disability insurance law, approached such a venture somewhat conservatively. Truthfully, no one knew at the outset just how heavy a load the hospital benefit would impose on the agency.

There were all sorts of predictions. Some anticipated that malingering would defeat the program.

Although our statistics were firming up in a most reliable manner with respect to anticipated loads and lengths of disability in certain types of illnesses, there entered a number of uncertainties as to the effect of paying benefits for hospitalization (with the waiting period statutorily eliminated) in some types of disabilities in the work force.

Some foresaw that any attempt at a disability insurance program in a state the size of California, coupled with an unemployment insurance system, would bankrupt the fund in short order.

We availed ourselves of the data obtainable, made work-load estimates and, with the enactment of the law, began administration of the program. We were pioneering and we knew it.

In short, here is what has occurred in the five years, since we paid our first California disability insurance benefit: Malingering has never been a problem as such, and our actual claim load has been far under original estimates.

We withdrew $200,000 in wage-earner contributions from the unemployment fund with which to launch the program. Between December, 1946, and June 30, 1951, the Department paid a net of more than $97 million in disability insurance benefits and an additional $4 million plus in hospital confinement benefits between January 1, 1950, and June 30, 1951.

Wage-earner contributions to the fund since May, 1946, when such taxes began going into the disability fund instead of the unemployment fund, to June 30, 1951, amounted to more than $212 million.

Administrative costs totaled *$10 million* during the life of the program to June 30, 1951. Administrative costs are paid out of the disability fund.

As of the end of the fiscal year on June 30, 1951, there was a balance of *$108 million* in the state disability fund. An additional *$103 million* in wage-earner contributions and interest of more than $11 million remain in the unemployment insurance fund available for disability insurance purposes.

After less than three years of operation of the program, it became evident that we were collecting in employee taxes roughly $2 for each dollar being paid out in disability insurance benefits. Clearly, we should move to increase benefits or reduce the tax.

In 1949, the law was amended to provide for payment of hospital benefits of $8 a day not to exceed 12 days in a benefit year. Any waiting period which otherwise would be required ends with the first day of hospitalization.

Notwithstanding the 1949 liberalization of the law in the form of providing hospital benefits, the state disability fund continued to increase.

Analysis showed that further liberalization of the benefit structure could not be expected to imperil solvency of the fund.

The 1950 legislature further amended the law to increase the maximum weekly disability insurance benefit from $25 to $30. Lesser amounts within the benefit structure will increase accordingly. This amendment is effective January 1, 1952.

Throughout the last few years there have been approximately three million workers in California eligible to file a disability insurance claim. From the disability insurance program which provides this wide coverage, a great deal of information has become available to those working the field of public health.

The information is particularly valuable in that it relates to nonoccupational illnesses and injuries which arise out of a large population of workers in a well diversified economy. As a matter of fact, our Department of Public Health is presently using our experience to great advantage in a morbidity research project which bids fair to open a relatively unexplored vista to public health and insurance authorities.

Until the recent adoption of the International Statistical classification system, each disability insurance claim was classified in accordance with the U. S. Public Health Service morbidity code, thus making possible subsequent tabulations of claims data by disability category. Periodically, tables have been prepared showing number of claims, compensation duration, and amount paid for each of the 518 categories of the morbidity code, by sex.

Unfortunately, these data which stem from an operation have the limitations inherent in the circumstances which relate to the operation. Principal among these are:

1. Not all workers in California are in insured employment. Of an average civilian employment in 1950 of 4,245,000 an average of 2,525,000 were in insured employment. Excluded from coverage were agricultural labor, interstate railroad employment, self-employed, federal, state, and local government employed, domestic service in private homes, persons in the employ of certain nonprofit, charitable, educational or religious organizations, and certain other small groups of workers.

2. Only those insured workers earning at least $300 during a base period can qualify for a claim under the state fund.

3. There is a seven-day waiting period under the state fund before compensation begins, unless the claimant is hospitalized during the waiting period. If hospitalized, the number of days remaining in the waiting period are waived beginning with the day of hospital admission.

4. Worker coverage is about evenly divided between the state fund and private plans. The 37,744 private plan contracts, as of August 30, 1951, while providing at least as generous benefit provisions as those of the state fund, contain a great diversity of provisions, affecting the claim filing rate, the duration, and the amount of benefits paid. Direct comparison or merging without adjustment cannot be done with the data from the two plans.

Despite these limitations, the disability insurance program has made available to public health workers one of the most comprehensive and complete bodies of information to date.

These are some of the high lights of the development of California's disability insurance system and its administration.

Workmen's Compensation and Rehabilitation*

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WORKMEN'S compensation in North America, with a history of only about 40 years in any state and only a very few years in others, has made widely varying progress, but is still so far from accomplishing what it should that it demands the serious consideration of all who are in any way concerned. Yet all of us—no matter from what state or province we come—seem to glory in the progress we have made, hail our own act as the best and overlook its great defects, while we have all made such halting and feeble efforts at improvement so as to make our pride in our acts rather ridiculous.

Some of you may remember, and certainly history records, that most jurisdictions started with compensation payments of around 50 per cent of wages but limited to a maximum of $10, $12, or $15 per week—applied to a very limited percentage of the workers and for a varied but limited period of time. No two states or provinces faced the problem in the same way. By an equally uneven and irregular pattern these benefits have been increased. But some states are still on a 50 per cent basis and some still have a $20 per week maximum, while others have increased the percentage to 75 or 80—the maximum to $35 or slightly more. In about half of the states compensation is still elective; in some a combination of elective and compulsory provisions applies. Number limitations vary with the different states and occupational disease coverage is so haphazard as to show no pattern. In no state or province are all the workers covered, and the benefits vary so widely as to make comparisons impossible. A study of *Bulletin 125*, U. S. Department of Labor, 1950, will leave one utterly confused as to what objective the legislators are endeavoring to attain.

With regard to rehabilitation, the picture is worse. Specific statutory provisions relating to rehabilitation of industrial disabilities were contained in only 16 of your states although the United States Civil Employees Act shows a commendable pattern.

In Canada, the conditions are similar—no uniformity, although the original acts were all founded on the Sir William Meredith report and were quite similar at the beginning. And in both countries where rehabilitation is recognized in the acts, the provisions vary in every state and province—a complete lack of uniformity, although from coast to coast our way of life, our standards of living, and our workmen are so similar that if dropped into a city, one could not tell in what state or province they were; while some employers operate in every state and province. And every seriously injured worker suffers the same pain, faces the same physical and mental stress, the same financial and domestic crises, and all seek alike "Freedom from Want" and "Freedom from Fear."

Almost 10 years ago Sir William

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* Presented before a Joint Session of the Industrial Hygiene and Medical Care Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 2, 1951.

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Beveridge in his history-making report,[1] said: "In the forty-five years of its existence the present system of dealing with the results of industrial accident and disease has contributed little or nothing to the most important purpose of all, which should have come first, namely, restoration of the injured employee to the greatest possible degree of production and earning as soon as possible." And here, at this time, we are talking about compensation *and* rehabilitation!

Workmen's compensation, if it is at all worthy of the name, must include rehabilitation as one of its main functions, just as it does monetary payments and medical aid. The day when small cash awards to the industrially disabled can be considered as just dealing is surely past; for that was as it was in the beginning, 40 years ago.

Today, modern manpower economy demands that everything possible should be done to keep the personnel in the best of health and productive capacity. Likewise, when accident and serious injury occur, everything should be done to refit the man for his job in the shortest period of time, or at least get him back into some productive position. This should be the main objective, while the necessary cash compensation for wage loss should follow automatically.

There is no argument against the practice of good medical care or rehabilitation—in fact, great effort is made to show approval—but what is the routine for carrying it through? Under common practice, the man has the right to choose his own physician, and the company and even the plant surgeon may, or must, sit back awaiting reports. They feel there is nothing they can do until, or unless, trouble arises, and often not even then. Every compensation surgeon can testify to the constant list of unnecessary permanent disabilities—cases resulting from bad management. For every physician is not skilled in traumatic or orthopedic surgery and a few days of unskilled treatment immediately following injury may mean the ankylosed joint, the stiff and useless hand, or the permanent disability. Surely someone should have the responsibility to see that skilled care is quickly furnished and disability reduced to the absolute minimum—no management would allow an unskilled man to attempt repair of an intricate and valuable machine. What machine is more valuable than a workman's good right hand! Where then should this responsibility lie? With the plant physician?—too often there is none. With management?—too often they are uninterested or fear to make suggestions. What is your answer?

And if the man is seriously injured, shows evidence of certain permanent disability—has lost an arm or leg—you all recognize that rehabilitation efforts should be instituted without delay. No gap should occur; no period of worry as to his future earning power, his job, the welfare of his wife and children. Someone must appear quickly, outline frankly and honestly the prospects, his rights and privileges, the possibility of retraining, reëducation, and job placement. Fears must be removed from his mind in order, not only to hasten recovery, but to prevent the development of those insidious conditions broadly grouped as traumatic neuroses, or sometimes malingering. Constructive planning for the future—assisted by physician, family, friends, and his boss—should replace the awfully destructive worry and fears which are so certain to make their appearance if the man is left to grope blindly for the way out.

And who should carry the responsibility for this service? Definitely, his surgeon should spend time and effort here—but what percentage of surgeons have the time, the skill, or even the will to spend the needed hours at this task? Certainly, however, it is his duty

to see that this social service is carried out by whatever agency is available or responsible in the particular state or province. I hope this is a universal practice in your country—unfortunately, it is not in mine. Again I ask where should this responsibility be placed? The answer is not easy.

We asked all these questions in our Province; we consulted organized medicine; we discussed it with labor and management. Fortunately, the answer with us was apparent and defined in the Act. Section 50[2] states: "All questions as to the necessity, character, and sufficiency of any medical aid furnished or to be furnished shall be determined by the Board," and in Section 52[3]: "To aid in getting injured workmen back to work and to assist in lessening or removing any handicap resulting from their injuries, the Board may take such measures and make such expenditures as it may deem necessary or expedient."

Under these sections, we did, therefore, accept the responsibility and did supervise medical and surgical care, arranged for some 120 beds in our best surgical hospitals for the care of the cases requiring specialized and expert treatment, and arranged for specialists to treat. We felt the men must have the best the nation afforded. The less serious cases were, of course, treated in their own hospitals, by the surgeon of their choice, and only referred when problems arose, or for training in the use of prostheses.

We set up a hospital of our own for the convalescent care and rehabilitation of the seriously and permanently disabled. Here, physicians, specialists in physical medicine, surgeons, nurses, physio and occupational therapists, physical instructors, rehabilitation officers, social workers, and recreational directors work as a team in order to bring the man quickly to the maximum of his abilities and return him to industry. Most of the cases are sent in by their surgeons for therapy as soon as active surgery is completed or between operations where multiple surgery is indicated. No surgery was attempted here; all cases requiring surgery were sent back to their surgeons and the surgical wards of their hospitals. The 500-bed capacity of the center is constantly taxed, and over 3,000 cases pass through the center yearly.

Organized medicine vigorously supported us in these endeavors and both labor and management have given wonderful support and coöperation.

Thus, I give you our answer to the question as to responsibility and assure you that it has met with universal approval.

Whatever your solution may be, it is certain that in both medical care and rehabilitation someone must have the authority and responsibility to see that the injured workman receives only the best in treatment—and this without unnecessary delay. Someone must see that the case, possibly requiring rehabilitation, reëducation, retraining, is quickly referred to the proper agency (with us, it was ourselves) and that the chosen agency performs the task promptly and efficiently.

I submit that this is the proper function of the compensation authorities and that, if given this responsibility, many permanent disabilities can be avoided and much man power salvaged for industry. And in this salvage lie savings for society in general, sufficient to make the plan economically sound. A self-supporting man is a national asset —an unemployable man a national liability that requires the savings of several to support. And all that is necessary is to place rehabilitation of the industrially disabled where it belongs in the compensation field, as the primary requisite—followed by medical aid and cash benefits.

In summary, I again suggest that we should not be discussing compensation

and rehabilitation. Rehabilitation is an essential and fundamental principle of workmen's compensation and its practice as a routine will only tend to place the cost where it is incurred and is properly assigned. And fortunately, as good surgery is less expensive than poor surgery, so will good rehabilitation make for sound savings to society, which now must accept the cost of its failure.

The virtues and values of rehabilitation need no further exposition—a routine for its prompt and early application in every case of serious industrial accident or disease is the urgent requirement.

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ACHA Scholarship Loans

The American College of Hospital Administrators has made available revolving Scholarship Loans to encourage deserving persons to pursue careers in hospital administration and to contribute to the improvement of hospital administration generally.

Believed to be the first of their nature in the field, the scholarships will be offered both to nonaffiliates and affiliates of the College, which is the professional organization of hospital administrators with headquarters in Chicago. This new project makes limited sums available annually to persons in the hospital field who will agree to repay the amounts on terms established by the College's Scholarship Committee. By assisting worthy persons to prepare better for the responsibilities of administration in hospitals, it is hoped that the scholarship program of the College will add materially to the knowledge and practice of the profession, advance health education and good hospital care.

Candidates must have a baccalaureate degree or its equivalent in education or experience, as well as a desire to better prepare themselves in hospital administration. Further information and application blanks from Dean Conley, Executive Director, American College of Hospital Administrators, 22 E. Division St., Chicago 10.

Food Habits of Maine School Children*

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THE agricultural experiment stations of Maine and five other northeastern states, are taking part in a five-year project begun in 1947. In Maine, the study covered 780 junior high school students from Bangor, Bucksport, Newport, and Skowhegan.

The information secured in this project has been obtained from four-day and seven-day diet records, blood tests for hemoglobin, vitamin A, carotene, vitamin C, and physical examinations for nutritional defects.

In Maine, the project has provided data for two bulletins entitled, *Remodeling the School Lunch for the Teen-Ager* and *Breakfasts of Maine Teen-Agers*. These bulletins give information on the day's diets of the children and the two specific meals. Information is given on the results of the physical examinations and blood tests.

The physical examinations showed that several types of defects, probably related to nutrition, were quite common in the children. These included overweight, underweight, signs of previous rickets, folliculosis (rough, dry, "goose-pimply" skin), marginal blepharitis (inflammation of the eyelids), thickening of the conjunctiva of the eyes, atrophic cheilosis (reddened, peeling lips), angular stomatitis (redness, cracks, and sores at the angles of the lips), changes in the papillae of the tongue, gingivitis (inflamed gums), and dental caries.

In the Bangor study underweight, atrophic cheilosis, and gingivitis were seen more often in the boys than in the girls. Overweight and folliculosis occurred more often in the girls. The fact that several types of defects occurred more often in the boys indicates that the very high food requirements of the boys were not being adequately met. Also, the appearance of the same defects in quite a number of the girls shows that the diets in general were in need of improvement.

The results of the blood tests for carotene and vitamins A and C give support to the conclusion that some physical defects, mentioned above, are related to nutrition. The results of the hemoglobin tests indicate that many of the diets were probably low in iron and possibly also in protein.

The nutritive value of the average day's diets of approximately 335 children has been calculated for 9 nutrients, using Babcock's short method of calculation. In this method all nutrients are expressed as per cent of the National Research Council's recommended daily dietary allowances for a physically active man.

Examination of the food records of the children indicates that many of the diets tend to be low in citrus fruits and juices, raw vegetables, green leafy vegetables, and milk and milk products. White bread and other white flour products, cereals, potatoes, dried beans, meats, fish, and eggs are used very frequently. Fried foods and desserts are very popular, and between meal eating is very common.

The results of the dietary calculations show that in comparison with the NRC's recommended allowances, the diets of the junior high school girls tend to be especially low in calories, protein, calcium, iron, and vitamin C. The boys' diets tend to be especially low in

* Presented before American School Food Service Association Meeting in New York, N. Y., November, 1951.

calories, calcium, and vitamin C.

Deficiencies in vitamin C, iron, and calcium are definitely related to the low consumption of citrus fruits and juices, raw vegetables, green leafy vegetables, and milk and milk products. Deficiencies in calories are the result of low total food consumption. In girls, especially, a low caloric intake is usually accompanied by deficiencies in other nutrients.

In writing the bulletin, *Remodeling the School Lunch for the Teen-Ager*, the nutritive value of eight school lunches served during one week in two Bangor junior high schools was calculated and compared with the NRC's recommended daily allowances. It was found that in general the lunches as served were apt to supply less than one-third of the recommended allowances. Calculations made of the nutritive value of the foods actually eaten by 48 children in their school lunches, and in their morning and night meals at home, showed that over half of the children who ate the hot school lunch did not receive two-thirds of their recommended daily allowances of the different nutrients in their morning and night meals at home. The only exception was in the case of riboflavin; its allowance was supplied by all of the lunches. With the exception of vitamin A, the nutrients which were not supplied for the majority of children by the morning and night meals were also those in which the lunches were most often deficient.

Despite the deficiencies in the lunches, more of the children in the total group who ate the hot school lunch had days' diets which could be considered adequate.

The type of school lunch study carried out in Bangor is of special value in pointing out what foods should be included in the lunches to best supplement the meals eaten at home. In schools where lunches are served to various ages of children, the dietitian should calculate the nutritive value of the lunches. She should first plan the lunches for the older children and then reduce the size of the servings for the younger children.

The subjects for our breakfast study were 27 girls and 30 boys of junior high school age from Bucksport, Newport, and Skowhegan. The percentage contribution of their average breakfasts to their average total day's food intake and to the NRC's recommended daily allowances was calculated. Also, statistical studies were done in order to find the relationship between the amounts of various nutrients in the breakfasts and those in the total day's food. The frequency with which various foods were served in the breakfasts was studied in relation to the nutritive value of the day's meals.

The results showed that in relation to the total day's food intake the breakfasts were more apt to be low in calories, protein, iron, vitamin A, and niacin than in calcium and vitamins B_1, riboflavin, and C. The nutrients most liberally supplied were those furnished by milk, enriched bread, cereals, and citrus fruits and juices.

In relation to the NRC recommended daily allowances, the breakfasts were apt to be low in calories, protein, iron, vitamin A, and niacin. Approximately 40 per cent of both girls and boys had less than 15 per cent of the NRC recommended allowances for vitamin C in their breakfasts.

The school lunches and breakfasts of Maine junior high school students indicate that both the breakfasts and the school lunches tend to be low in calories, iron, niacin, and vitamin C. Therefore, in order to improve the school lunches so that they will best supplement the diets as a whole, special attention must be given to the use of foods high in these nutrients. Possibly in the not too far distant future breakfasts, as well as lunches, will be served in the schools.

A Tab System for Use in the Follow-up of Health Examinations*

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SCHOOL health examinations, though careful and complete, will prove to be of little value unless their findings are effectively utilized. When large numbers of students are examined, those conditions which require subsequent attention may be overlooked and neglected unless there is an efficient method of recording them and of preventing their becoming lost in a mass of detail. It is desirable to employ a system which will both preclude these sins of omission and one which also makes it possible for the school physician or school nurse to easily determine which students and what conditions require attention. A system which permits a quick selection of, or a rapid count of, those students who require an eye specialist's examination, a repeat urinalysis, a surgical consultation, or a periodic determination of growth or weight, etc., has obvious advantages and uses.

This brief article describes such a system. It developed out of several years' experience in secondary school health examinations and in response to the need for a simple, quick, and accurate method of pursuing conditions either noted at those examinations or brought to our attention by parent, teacher, or family physician.

Each student has his own 6 x 9 inch standard ruled card. At the end of each day's health examinations, tabs indicating pertinent matters are affixed along the upper horizontal margin of this card according to a simple code system. The use of these tabs permits the rapid selection of any and all who require a special type of attention, a quick estimate of the number requiring any procedure, and an easy method of noting those who should be reviewed at any given date.

A typical card is shown in Figure 1. Nu-Vise colored tabs† are satisfactory. Their width (11/32 inch) allows several to be placed in well spaced columns along the card's margins, and because they are manufactured in a variety of colors, it is possible to develop a color-tab code which will meet all one's requirements. Brief comments regarding the matters tabbed may be written on the lower lines of the card.

The key code card is prepared by the administrator to meet the needs of his school health program: some columns would undoubtedly be common to all school health programs, but there is no limitation in the number of tab combi-

* From the Children's Medical Center and the Harvard School of Public Health, Boston, Mass. Studies in which this system was used were supported by funds from the Grant Foundation, Inc.

† Graffco Nu-Vise Signals are manufactured by the George B. Graff Co., Cambridge, Mass., and are stocked by most stationers.

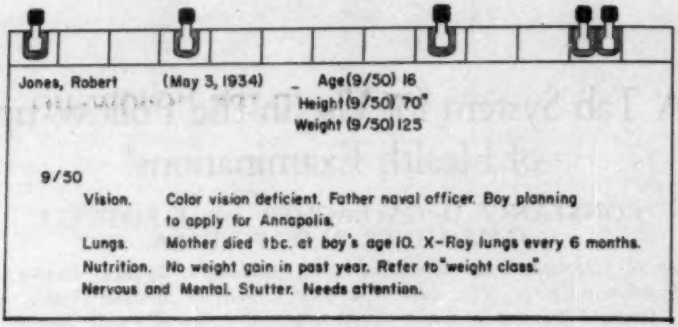
Jones, Robert (May 3, 1934) Age(9/50) 16
Height(9/50) 70"
Weight (9/50) 125
9/50
Vision. Color vision deficient. Father naval officer. Boy planning to apply for Annapolis.
Lungs. Mother died tbc. at boy's age 10. X-Ray lungs every 6 months.
Nutrition. No weight gain in past year. Refer to "weight class."
Nervous and Mental. Stutter. Needs attention.

FIGURE 1—A typical card, ready for filing. Code tabs have been affixed in the proper columns, and brief comments regarding significant health examination findings have been written. From left to right (in columns 1, 4, 9, and 12) the tab colors are: black; green; orange; black and red.

nations which can be worked out to meet special conditions and interests. The key code card is kept at the front of the alphabetical file so that it will be readily available for reference in coding a new card or interpreting the coding of one previously tabbed. It is prepared by marking off a standard 6 x 9 card (see Figure 1) into 13 vertical columns 11/16 inch wide, each of which will subsequently be devoted to a single item such as "Vision," "Hearing," etc.

Table 1 lists the headings of each of the vertical columns shown in Figure 1 and the significance of the various colored tabs when used in each of the columns. This material should be written directly on the "key card" for ready reference. The advantages of the flexibility in the key card are obvious: from year to year as there are changing needs, interests, and facilities the key card can easily be changed to meet them.

It will be apparent that this system makes it very easy to count and select the number of students who have a defect in color vision, who should have dental care, who should see the consulting otologist at his next visit, who have not as yet been immunized against

TABLE 1

Column	
1. Eyes	
Requires specialist's examination	green
Needs shatterproof glasses	yellow
Color vision deficient	black
2. Ear-Nose-Throat	
Hearing impaired	black
Requires specialist's examination	yellow
3. Teeth	
Dental care (caries) needed	black
Dental prophylaxis needed	yellow
Orthodontia advisable	green
4. Lungs	
Tuberculosis contact—x-ray every six months	green
X-ray annually	black
Asthma (severe)	yellow
5. Heart	
Congenital heart disease	green
Rheumatic heart disease	orange
Heart disease suspected	yellow
6. Abdomen-Genitalia	
Chronic disease (ulcer, etc.) present	dark green
Hernia present	green
Pilonidal sinus present	yellow
Undescended testis	black
Menstrual disorder	orange

7. Skeletal
   - Posture needs correction...green
   - Recurrent low back pain..black
   - Knee injury.....yellow
   - Muscle weakness (polio, etc.) .....orange

8. Skin
   - Acne needs treatment.....black
   - Epidermophytosis needs treatment .....green
   - Other skin disease.....orange

9. Nutrition
   - Underweight—needs attention .....orange
   - Underweight—recheck in one month.....black
   - Overweight—needs attention .....green
   - Overweight—recheck in one month.....dark green
   - Development retarded.....yellow

10. Immunization
    - Needs smallpox vaccination .....green
    - Needs diphtheria toxoid...orange
    - Needs tetanus toxoid.....black

11. Laboratory
    - Persistent albuminuria.....black
    - Orthostatic albuminuria... green
    - Glycosuria .....yellow
    - Secondary anemia.....orange

12. Nervous and Mental
    - Stutter .....black
    - Lisp .....dark green
    - Emotional or personality disorder .....orange
    - Migraine .....yellow
    - Cerebral dysrhythmia.....green

diphtheria, or who require a "booster" tetanus immunization two years hence. To be able to select quickly all those students who have a particular disorder, or to rapidly estimate the number still requiring some procedure, and to have obvious reminders of matters needing attention immediately or at some specific future date is to save time and to avoid neglect. The table furnishes an outline of the topics assigned to each of the columns on the key card, together with an explanation of the significance of each of the tab colors used in each column. This outline should be written on the "key card" which can then be superimposed upon each student's card for easy tabbing or decoding. The topic (vision, hearing, etc.) assigned to each of the vertical columns should be indicated along the top margin of the key card. When a red tab is used in combination with another tab (see Figure 1), it indicates that a condition requiring attention is present. For the sake of clarity these data are presented in table form rather than as a reproduction of a typical key card.

The Need for Continuous Dental Treatment in Elementary School Children

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IN New York City, dental health of the school child is supervised by the Departments of Health and Education. As part of this joint program, all school children in the elementary and junior high schools are referred to their family dentists and are requested to return a signed note from a dentist indicating that dental treatment was begun, or completed, or that no treatment was required. In the school year, 1949–1950, 65 per cent of the children returned with such notes. No punitive measures are employed if a child does not return the dental notes but every effort is directed toward dental treatment completion at least once in each school year. In so far as facilities permit, children who cannot afford private care are treated in free Department of Health dental clinics.

Various devices are used by individual teachers and dental hygienists to stimulate children to complete their dental treatment and one of these is the "100 per cent banner" award to those classes in which every member returns a completion note. The banner award seems to have particular value in overcoming the resistance of the last few pupils who might otherwise avoid dental care. With the increased emphasis upon dental correction in the past few years, there has been a gradual increase in the number of 100 per cent classes. In the school year 1950–1951, there were 962 such classes out of the 23,000 classes in the elementary and junior high schools.

The school dental note is considered valid from June 1 of one year to June 1 of the following year. A class that achieves 100 per cent dental correction will therefore have some children whose dental treatment was completed at some time since the previous June 1. However, the dentist's note of "completion" is not always an indication that all dental defects have been corrected, and it was of special interest to determine what proportion of children who had obtained a "completion" note within the year, were nevertheless still apt to require treatment.

In May of 1941, dental hygienists inspected all classes that had attained 100 per cent correction by that date. Six hundred and fifty-eight classes, with a register of almost 19,000 pupils, were in this group. The routine dental inspection was made in good light with tongue depressors. The number of children with one or more obvious dental defects were reported. Notation was made as to whether dental notes came from Department of Health clinics or if the children were treated elsewhere. Ninety per cent of the dental treatment received by the children of New York City is provided by the private practitioner,[1] the Department of Health provides six per cent, and other agencies provide the remaining four per cent. Since economic status plays such an important role in determining whether a child will receive dental care, 100 per

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TABLE 1

Number of Children with Obvious Dental Defects Among 18,998 Pupils Who Had Received Complete Dental Care Between June, 1950, and May, 1951

	Source of Treatment					
	Department of Health		*Private Dentist*		*Total*	
	Children	*Per cent*	*Children*	*Per cent*	*Children*	*Per cent*
No Obvious Defects	293	83.2	15,197	81.5	15,490	81.5
Obvious Defects	59	16.8	3,449	18.5	3,508	18.5
Total	353	100.0	18,646	100.0	18,998	100.0

cent classes tend to be concentrated in the areas of high economic status. The Department of Health provides dental care for comparatively few children in well-to-do neighborhoods and it was found that less than two per cent of the children in "Banner" classes were treated at a Department of Health clinic.

Since there was no reason to give any child treated in the Department of Health clinics a "completion" note unless the dental care was completed; and since "completion" notes were given only after all carious teeth had been properly filled and all unsavable teeth had been extracted; and since both the quality of care and the completeness of care are checked by bitewing x-ray in many cases and by routine supervisory spot checks, the treatment needs discovered within the year after completion at a Department of Health clinic would be very likely due to new caries, accident, or an occasional defective or lost filling. These needs would represent the natural incremental dental needs of children under good dental supervision.

This survey demonstrated that within one year of having received a "completion" dental note (Table 1) obvious defects were present in 16.8 per cent of the children treated by the Department of Health. This compares with 18.5 per cent of children who were treated by private dentists. The difference of 1.7 per cent, while highly significant statistically, is not of sufficient magnitude to seriously reflect upon the difference of quality of care provided for the children of New York City by the Department of Health and private practitioners.

CONCLUSIONS

1. Children, treated under carefully supervised conditions at Department of Health clinics, had obvious dental defects to the extent of 16.8 per cent within one year of completion of all treatment needs. This was only 1.7 per cent less than was found in children whose treatment was completed by private dentists.

2. In view of the fact that such a large proportion of children who had all dental defects treated, required further care within one year after completion, it is important that dental treatment for children should be continued at short intervals and it would seem that the requirement of an annual dental note for school children is not too rigorous.

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Relationship Between Federal, State, and Local Food Sanitation Programs*

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FOUR years ago the Food and Nutrition Section appointed a Committee on Sanitary Practices in the Food Industry.[1] Its aim was "to prepare a manual of effective, reasonable and workable sanitary practices for the guidance of those engaged in, or dealing with, the food industry." Because of the importance of the subject and the broad scope of the undertaking the committee membership included representatives of several sections of the Association. This was certainly desirable, since food sanitation is not confined to any one professional group. It involves the administrative effort of the health officer; the promotional techniques of the health educator; consideration of the problems of nutrition; standards and technics of the laboratory specialist; the research facilities of the university; the design and planning knowledge of the engineer; and the experience and ability of the sanitarian and food technologist.

STANDARDS—A LONG-RANGE PROJECT

History indicates that progress in the development of uniform standards is apt to be exceedingly slow unless new means are employed to expedite the work. Forty years ago C. J. Steffen,[2] first president of the International Association of Milk and Food Sanitarians, said, "How to proceed to more completely safeguard the milk supply . . . and how to standardize and make uniform our work are some of the objects for which this Association was organized." In the succeeding 40 years the International Association made remarkable progress in "safeguarding the milk supply." It succeeded in developing a number of "3A standards." But in 1949 its Committee on Milk Regulations and Ordinances[3] reported that some of the members expressed "diametrically opposed" views on the proposed tentative revised USPHS Milk Ordinance; that it was not possible to reach agreement on any single code. But the development of milk sanitation standards could well serve as a model for other branches of the food industry. In the 25 years since Leslie Frank began "selling" the idea, the Ordinance and Code recommended by the Public Health Service has been adopted as the state-wide regulation of 13 states by 1,519 municipalities and 386 counties. The population coverage is about 60 million. The standards for pasteurization are practically uniform in all parts of the country. The "3A Standards" are becoming the national standards for dairy equipment.

The Ordinance and Code Regulating Eating and Drinking Establishments recommended by the USPHS is also approaching the status of a national standard. It is in effect in 674 munici-

* Presented before the Food and Nutrition and Laboratory Sections of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

palities and 322 counties, is state-wide in 19 states. By the middle of 1951 it gave coverage to more than 70 million persons.

The Code of itself does not provide the answers to all our questions. Take dishwashing, for instance. Should we accept quaternaries in lieu of hot water or chlorine for the sanitizing process? How about chloramines? To help provide these answers, the USPHS did a considerable amount of research. Means must now be made available so that industry and health officials throughout the country can apply "group judgment" in interpreting the laboratory data in terms of practical field conditions. Until this is done, state and local interpretations of the Ordinance will range from complete approval of all quaternaries in some jurisdictions to complete prohibition of their use as a dish sanitizer in other areas.

Throughout our consideration we need not expect to achieve rigid uniformity. For example, some communities will want to adopt the USPHS ordinance with the "grading type" of enforcement procedure. Others will want to adopt the procedure whereby the health officer may suspend the permit of an establishment which does not meet minimum standards. Some cities will require higher standards for construction, plumbing, and food-handling facilities than can be adopted on a state-wide or national basis.

GROUP ACTION WILL SIMPLIFY WORK

Let us consider some of the typical problems of the local health officer or sanitation administrator. A sales agent for an insecticide-dispensing machine tells the school board he has the answer to the problem of flies in school cafeterias. He says that by simply connecting his device to the electric system it will continuously dispense an invisible cloud of residual insecticide that will keep the school cafeterias and lunchrooms free of flies. The school board asks for the health officer's approval. The sales agent shows the health official a portfolio of photostatic copies of letters containing real and purported testimonials of health officials, private laboratories, and "satisfied users." But the health department needs more specific information, based on impartial tests. What is the toxicity of the insecticide? What amount will accumulate on eating utensils and food preparation surfaces? Will there be any harmful effects on employees who spend 8 hours a day in the room where the invisible insecticide fog is constantly generated?

At present, the average state and local health department official must either ignore these problems or he must tackle them individually. The local health officers of California may refer such questions to the Conference of Local Health Officers. Its Committee on Environmental Sanitation, in cooperation with the State Department of Public Health, seeks all available data and advice. In our illustration, however, where can the answers be found? What federal agency has the answers? Does the U. S. Food and Drug Administration allow the device in food plants under its control? What information on this subject was presented at Congressional hearings on chemicals in foods?

LOCAL HEALTH OFFICIALS MUST FURNISH ANSWERS

We need *new* and more positive means to get answers to such questions. The local official must squarely face the issue. On him is pinned the responsibility of making a decision, and if the decision is to be wise it must be based on more factual data than are generally now available.

The Conference of Local Health Officers started to tackle the problem of food sanitation at carnivals and circuses. It was decided that this problem cannot

be adequately solved on a state basis. The Conference of Municipal Public Health Engineers and, more recently, the Engineering Section of this Association have appointed committees on this problem. Again, means must be found to apply group judgment; to discuss the problems with experienced executives of the traveling shows.

A citizen complains that restaurants are serving watered orange juice as "pure" juice. The informed complainant asks, "Isn't this just as important as preventing watering of milk?" The problem is intensified by the growing use of concentrated juices. What is pure prune juice? Should vegetable juices be pasteurized? If not, what minimum standards should be required for their cleaning, handling, and preparing? Can agreement be reached on bacterial standards? When the local sanitarian examines for cleanability the new "impulse seller" now placed on lunchroom counters to dispense orange juice, should he be interested in whether the stirring process reduces the vitamin content? The nutritionist and bacteriologist should be consulted for answers to some of these questions. Many hours could be saved and many headaches avoided by sound decisions made on a national rather than a local basis.

Some local health departments have found that they cannot wait indefinitely for others to establish sanitation standards. New York City, for instance, decided that the syrup pumps for soda fountains should be redesigned so that they can be taken apart for cleaning. The New York City program started a reaction across the country. In Chicago, the Soda Fountain Manufacturers Association began work on the problem, calling on the National Sanitation Foundation for guidance. Los Angeles soda fountain manufacturers asked us for advice, stating that they must redesign if they are to continue selling their units in the New York market. Industry designers held several meetings with New York health officials. Later, at the Sanitation Clinic at Ann Arbor, industry and health officials agreed on sanitary design principles to cover the entire soda fountain. Cleanable units are being built in accordance with the specifications. There are indications, however, that the older, less expensive units will be sold unless health officials show interest in cleanable features. One large chain organization found that when syrup pumps are taken apart for cleaning, some parts may get lost. To avoid the cost and bother of replacement, the company now specifies the noncleanable units for installations in all but the four communities which have shown official interest in this subject.

There is a decided difference between the enforcement methods employed by the average local building department and those of the health department. The building codes are generally specific in outlining requirements. The building department usually checks each step of the construction, including approval of plans and the installation of plumbing and wiring. Health departments, on the other hand, often first notice a new food establishment through public announcements of a "grand opening." The sanitarian is apt to find any number of items that do not conform to the sanitary code. The dishwashing machine may have no booster heater to provide the required sanitizing rinse; the bakery flour conveyor may not be designed for cleaning and inspection. Owners say, "Why didn't the building department tell me about this? Here are my building and plumbing permits!"

Our Los Angeles Food Sanitation Advisory Committee members believe that the man who invests in a new food plant is entitled to supervision of construction and installation to insure conformance with health regulations. We worked on these problems for about two years with a local Food Equipment Manufacturers'

and Distributors' Advisory Committee. The group developed an ordinance to regulate food plant design and construction and to establish minimum sanitary features for equipment and methods of installation. The ordinance has many weaknesses because it is not possible to answer some questions on a local basis and because it is not practical to establish high local standards on the design of equipment sold on a nation-wide basis.

NATIONAL STANDARDS ESSENTIAL

Food equipment standards must be developed on a national basis. St. Louis outlawed a device which dispensed whipped cream through an uncleanable bicycle valve. The headquarters of the distributor of the device happen to be in Los Angeles. The head of the company told us it would cost a vast sum to replace the thousands of units supplied to restaurants in several states. He wanted to be sure a new design, acceptable in St. Louis, would be approved in Chicago. The company official reasoned that since St. Louis outlawed the device because it did not comply with cleanability requirements of the Ordinance and Code Regulating Eating and Drinking Establishments, the Public Health Service should provide advice for approval of a new design which would be acceptable wherever the Ordinance is in effect. The company coöperated in redesign and the Public Health Service issued a letter stating that the new model conforms to the Ordinance requirements.

In the last fiscal year the Public Health Service made over 325 such investigations of various items of milk and food equipment. State departments of health and other agencies are advised of those items which are found to meet requirements.

Many equipment items present such complex problems that sound, acceptable answers require research, group judgment, and the democratic process of give-and-take discussion between groups representing regulatory officials and industry. The National Sanitation Foundation has provided the mechanism whereby these objectives are being fulfilled. Under Foundation sponsorship, six national organizations are working together through a Joint Committee on Food Equipment Standards:

Organization	*Representative*
American Public Health Association	Walter D. Tiedeman
U. S. Public Health Service	A. W. Fuchs
National Association of Sanitarians	C. W. Clark
International Association of Milk and Food Sanitarians	Clarence W. Weber
Conference of State Sanitary Engineers	A. H. Fletcher
Conference of Municipal Public Health Engineers	Morton A. Hilbert

NATIONAL SANITATION FOUNDATION PROVIDES A PROGRAM

Each organization has a Committee on Food Equipment Standards and the committee chairmen comprise the Joint Committee. Mr. Walter Tiedeman, the Foundation's Director of Testing Laboratories, is Secretary, and the author, as delegate-at-large, is Chairman. The Foundation has approved specific procedures. Industry "task committees" prepare detailed preliminary standards for consideration, in consultation with the Joint Committee. After repeated conferences and revisions such standards may be approved by the Joint Committee. Recommended standards are then subject to review and approval by the 30 members of the Foundation's Council of Sanitation Consultants. Final standards, suitably illustrated, will be published for distribution to health and industry officials as Standards of the National Sanitation Foundation. These will provide the guide for awarding the Foundation's Seal of Approval, which manufacturers will be authorized to affix to models that conform. It is hoped that the standards will also be

adopted or accepted as an official guide for local, state, and federal regulatory agencies.

Two comprehensive sets of standards have been developed by this long and painstaking process. These are the Soda Fountain Standards, which already form a basis for the design of all leading makes of soda fountains, and standards for general food service equipment. The member organizations of the Joint Committee are now reviewing a third draft of standards for dishwashing.

To illustrate how the National Sanitation Foundation program operates, we can consider the methods employed in developing dishwashing machine standards. In 1945, under sponsorship of the Foundation and with the full support of the dishwashing machine manufacturing industry, Dr. Walter Mallmann began research on the subject. His work on artificial soil, the time and temperature necessary to produce a satisfactory bacteria kill, and other basic research were described in bulletins released by the Foundation in 1947 and 1949.[4]

In June, 1948, at the First National Sanitation Clinic, held in Ann Arbor, Mich., officials of the dishwashing manufacturing industry and health authorities considered the results of preliminary research and began applying "group judgment" to the subject. In the words of Mr. G. B. Fox[5] of the Hobart Manufacturing Company, "This was the first time in the history of the dishwashing machine industry where health officials and industry sat down at a conference table and discussed their mutual problems on a national basis. Not only were these problems discussed, but definite recommendations were formulated."

In 1950, the industry appointed an Industry Task Committee, which used the research data to formulate a preliminary set of standards. Then the Joint Committee met at Ann Arbor with Dr. Mallmann and industry representatives and went over each item. Several drafts have since been considered by mail. Washing and rinsing times and temperatures; water pressures, volumes, velocities; detergent strengths; prewashing procedures and many other variables all complicate the job of answering the question, "What standards are requisite to efficient washing and sanitizing?" Group judgment, plus an understanding of the relationship between laboratory research and field operation, is gradually providing acceptable standards.

Restrictions established by national defense authorities on the use of metals and materials are causing delay in the redesign of some equipment to meet new standards. Development of the standards is continuing, however, so that when full-scale production is again possible, new units can be built to meet acceptable standards. Meanwhile, some standards are forming a basis for federal officials to allocate critical materials on the basis of need for protection of the public health.

INDUSTRY INSPECTION PROGRAMS

There is increasing interest in promotion of "self-policing" by industry. Locally this ranges from the required self-policing program of New York City to the "be your own inspector" educational approach of other communities.

On a national scale, there are notable programs of industries employing trained sanitation supervisors who form an important part of the plant management team. The Food Industries Sanitarian Association shares many common interests with health officials. Sanitary inspection and supervision are also being provided by commercial sanitation consulting firms. Some specialize in original design and layout, others provide continuing supervision of operation.

Some groups are conducting valuable industry-wide sanitation training and supervision programs. The National Canners Association's program is an il-

lustration of a coördinated program of promoting self-inspection. The American Institute of Baking and the Ice Cream Merchandising Institute illustrate how well industry can conduct sanitation training programs through institutes, posters, and literature.

Stimulated by the U. S. Food and Drug Administration, New York City's enforcement programs, increasing insistence on sanitation by other local authorities, and by industry's desire for clean operation, there has been formed a Baking Industry Sanitation Standards Committee. This group is developing sanitary standards for the various types of bakery equipment. Preliminary standards have already been prepared for 10 of the possible 25 broad classifications. The industry will soon be seeking a method whereby its proposed standards may be reviewed and approved by an agency representing the regulatory officials of the nation.

All of this work by industry deserves support and encouragement from health officials. In many respects industry-employed sanitarians are in a position to accomplish much more than the official sanitarian. Employment of industry sanitarians and development of their programs will be expanded in accordance with how well we promote to the general public and local businessmen the idea that "Sanitation is a Way of Life."

SUMMARY

Progress is being made in providing improved local, state, and national food sanitation programs. There has been a singular lack of communication between the many agencies interested and officially concerned with the problem. There has been a tendency to segregate into separate compartments the interest of each technical group. Questions of nutrition, chemical adulterants, quality of ingredients, and labeling standards have usually not been adequately considered in our general health department food sanitation programs.

There is much to be done in developing nationally acceptable standards, but in this field progress is encouraging. Codes recommended by the Public Health Service now cover over half the nation's population. The Federal Food and Drug Administration enforcement program, coupled with state and local programs and industry-wide coöperative efforts, are all stimulating improved sanitation programs for food-processing plants.

Many improvements will be accomplished when local health leaders insist on adequate standards. In this, the local health officials of the smaller communities need help from their states to determine what standards should be enforced. Some states are beginning to provide this assistance. The USPHS and the Food and Drug Administration are both giving active leadership.

The National Sanitation Foundation has provided the mechanism whereby all official agencies may work with affected industries to develop the most practical solutions to the various problems. We must not expect solutions and agreements too rapidly. On the other hand, the need for improvement is great and to get results we must provide full, vigorous support through nation-wide teamwork between local, state, and national agencies and the affected industries.

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A Comparative Study of Cancer Mortality in England and the United States

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DEATHS from cancer are occurring in England and Wales at a rate of more than 80,000 per annum. In the United States the corresponding figure is over 200,000. In both countries these deaths are subjected to routine analysis by the public authorities, and detailed figures are published in very similar form. Thus, a large body of material is continuously accumulating for a comparative study of cancer mortality. In this paper an attempt is made to describe and discuss the main points of similarity and contrast between England and America. A Danish comparison has been added where possible.

Three official sources have been used: the Registrar-General's *Statistical Review of England and Wales*,[18] *Vital Statistics of the United States*,[11] and *Causes of Death in the Kingdom of Denmark*.[10] Age-specific death rates were calculated for various cancer sites from the deaths occurring and the populations living in the three years from 1946–1948. These rates were then used to calculate standardized death rates (S.D.R.'s *passim*). In this way some of the differences in crude cancer death rates which are due to differences in the age composition of the three countries have been eliminated. The standard population adopted was that recommended by the International Statistical Institute,[9] from which a standard million of persons aged 35 and over was obtained and is shown as follows:

35–44—	352,237
45–54—	274,481
55–64—	206,957
65–74—	118,386
75 and over—	47,939
35 and over—	1,000,000

S.D.R.'s are quoted for males and females in England and Wales, in the white and nonwhite populations of the United States and, when possible, Denmark. In addition, estimates have been made of the standardized mean age at death (S.M.A.D. *passim*) corresponding to each S.D.R.

Deaths below the age of 35 have been excluded. This only involves the loss of about 2 per cent of fatal cancers in England and Wales and about 3 per cent for the American white and Danish populations. But for nonwhite males the percentage excluded is 4 per cent, and for nonwhite females 7 per cent. The larger loss from the two nonwhite groups is due partly to the lower average age of the nonwhite population, and partly to a tendency for nonwhites to die from cancer (as from other causes) at an earlier age. Neither of these factors is likely to have influenced the standardized figures, but some bias must have resulted from the use of a standard population divided into only five age groups. Within each 10-year age group of the population at risk there is a tendency for the nonwhites to be of lower average age than white Americans, and for these in turn to be younger than the corresponding English group.

TABLE 1

Standardized Death Rates from Cancer of All Sites Per Million Living over the Age of 35: 1946–1948

Group	Males		Females		Sex Ratio F/M
	Rate per million	Rate as per cent of rate for E. & W.	Rate per million	Rate as per cent of rate for E. & W.	
England and Wales	3,584	100	2,832	100	0.79
Denmark	3,017	84	3,224	114	1.07
U. S. whites	2,937	82	2,872	101	0.98
U. S. nonwhites	2,578	72	2,898	102	1.12

The S.D.R.'s therefore tend to understate the liability to fatal cancer of Americans, particularly nonwhites, as compared with English and Welsh people. However, check calculations based on the English and Welsh statistics show that quoted rates lie within one per cent of rates based on a five-year age grouping, and this source of error has, accordingly, been ignored.

MORTALITY FROM CANCERS OF ALL SITES

Table 1 gives the S.D.R.'s per million from cancers of all sites. England and Wales had the highest male, and the lowest female mortality of the four groups. Two relative magnitudes hold for both sexes: Denmark has a higher rate than U. S. whites, and also a higher rate than U. S. nonwhites. The four other international comparisons which can be made give different relative magnitudes for the two sexes.

From the percentage comparisons in Table 1 it is clear that much greater variation occurs between the all-sites S.D.R.'s of men than between those of women, and this requires some explanation.* One influence tending to disperse the male rates may be a differing inborn resistance to death from cancer in the four populations, but, if so, it should apply with equal force to the female rates. The fact that the proportion of operable cancers is larger for women than for men may have brought the *absolute* differences between the female death rates below those for males, but it cannot have affected the *percentage* differences shown in Table 1. It therefore seems fair to infer that environmental factors are of greater importance in determining the frequency of male than of female cancers. If this is correct, two hypotheses suggest themselves: (a) that liability to cancer may be determined by heredity to a greater extent in women than in men, and (b) that there may be greater uniformity as between countries in the circumstances of housewives and mothers than in the circumstances of men following diverse occupations outside the home. Since each of the four populations has a different balance of agricultural and industrial work, occupational contrasts may well feature in international figures for males, but are less likely to affect female statistics.

The ratio of female to male S.D.R.'s from cancer of all sites is shown in the last column of Table 1. Since the female S.D.R.'s for England and for the two American groups are so close to each other, the three corresponding ratios merely present a mirror image of the male S.D.R.'s. The exception is the ratio for Denmark where the very

* The very close correspondence of the female rates for the English and the American populations is to some extent a fortuitous result of combining the years 1946, 1947, and 1948. The use of three years was intended to minimize the effect of chance variations in deaths from cancer of the rarer sites. But it has also suppressed movements in the all-sites rates which may well be systematic. For example the all-sites rate for nonwhite males was in 1946, 68 per cent, and in 1948, 76 per cent of the English standard. The rate for nonwhite females actually overtook the corresponding English rate, passing from 98 per cent in 1946 to 107 per cent in 1948.

high female S.D.R. is 7 per cent in excess of the male S.D.R.

Mean ages at death are of interest, though more difficult to interpret than actual death rates. If international comparisons are to be made of age at death the ages must, like death rates, be standardized to allow for differences in age between the populations at risk. For each group, and for every cancer site studied, an estimate has been made of the mean age at death which would be observed in a population of standard age composition having the age-specific death rates of the racial group concerned. It had to be assumed that within the 10-year age groups used for standardization the average age of death fell at the middle of the period. (Deaths over the age of 75 were taken to be at an average of 80.5 years). In interpreting these S.M.A.D.'s it should be remembered that the exclusion of deaths under the age of 35 has imparted an upward bias in every case. This bias is strongest in the case of cancers with a low S.M.A.D. and in those all-sites rates which happen to contain a relatively large proportion of such cancers.

Table 2 gives S.M.A.D.'s for all sites of cancer. The S.M.A.D. for nonwhites is conspicuously early in both sexes, but particularly so in the case of nonwhite women. In this group death from cancer is estimated to occur, on an average, five years earlier than in the other three groups of women. This contrast (which would have been even greater if deaths below the age of 35 had been included) shows that the greater uniformity of female as against male S.D.R.'s does not extend to S.M.A.D.'s, although the ages at death of the three *white* female groups are closer than those of the three white male groups.

Mean age at death from cancer is the resultant of at least three factors:

a. availability of treatments which postpone death
b. proneness of the group concerned to cancers associated with exceptionally early or late death
c. acceleration of the onset of cancer by *intensive* exposure to adverse living conditions (including high concentrations of carcinogens)

It is, of course, impossible to decide, from mortality statistics alone, which factor has had the dominant influence in a particular case. But the present set of figures suggest evidence on (b) and (c) which is discussed later in this article under the section titled, "Estimated Mean Age at Death by Site."

CANCERS OF ACCESSIBLE AND INACCESSIBLE SITES

It is a common practice in comparative studies of cancer mortality to present figures for two sets of cancer sites, termed "accessible" and "inaccessible." The original purpose of this distinction was to define a group ("accessible") in which the diagnosis of cancer could be made with confidence, and thus to arrive at national or annual figures whose comparability was above suspicion. The function of this classi-

TABLE 2

Standardized Mean Age at Death from Cancers of All Sites: 1946-1948

Group	Males		Females	
	Mean Age	Younger (−) or older (+) than E. & W.	Mean Age	Younger (−) or older (+) than E. & W.
England and Wales	64.1	0.0	62.4	0.0
Denmark	65.6	+1.5	63.2	+0.8
U. S. whites	65.2	+1.1	62.5	+0.1
U. S. nonwhites	61.2	−2.9	57.8	−4.6

TABLE 3

S.D.R.'s Per Million Living from Cancer of "Accessible" and of "Inaccessible" Sites: 1946–1948

Group	Accessible				Inaccessible			
	Males		Females		Males		Females	
	Rate	Per cent of E. & W.	Rate	Per cent of E. & W.	Rate	Per cent of E. & W.	Rate	Per cent of E. & W.
England and Wales	676	100	860	100	2,752	100	1,867	100
U. S. whites	617	91	797	93	2,081	76	1,874	100
U. S. nonwhites	419	62	641	75	1,929	70	2,054	110

fication tends to lose its importance with each improvement in diagnostic technic. But two other aspects of the classification are of increasing importance: we may attempt to redefine the accessible group in order to include cancers which are (a) accessible to treatment, or (b) accessible to the action of environmental carcinogens. In these ways we may eventually hope to assess advances in treatment and measure environmental risks. The definition of accessible which has been used in the construction of Table 3 is the traditional one—that is, "accessible to easy diagnosis"—and the allocation of sites has followed as closely as possible that used by Greenwood.[6] The following sites have been classed as accessible: lip, tongue, moutl,, tonsil and jaw, rectum, breast, skin, male genital organs (except prostate), larynx, and trachea. All other sites (with the exception of the group "other and unspecified sites," which has been excluded) ,are classed as inaccessible. The reader will find detailed figures elsewhere in the paper which will permit reclassification in accordance with his particular judgment.

It will be seen in Table 3 that the male S.D.R.'s, both for accessible and inaccessible sites, reproduce the order of magnitude of the all-sites rates shown in Table 1, that is, from highest to lowest: England and Wales, U. S. whites, U. S. nonwhites. But, as the percentage figures show, the dispersion of the rates is much greater for accessible than for inaccessible sites. Cancer of sites accessible to early diagnosis may be more amenable to control by treatment, so that, if the standards of treatment available were very different in the three groups this might cause the mortality from cancers of accessible sites to show the greater variation. But the lowest of the three male rates for accessible sites is that for U. S. nonwhites, and this suggests that treatment is not the source of the variation observed. It is more likely that the accessible sites in Table 3 include a high proportion of the sites most exposed to environmental influences and for this latter reason are more liable to be differentiated as between one country and another.

Female mortality frora cancers of accessible sites shows the same order as that observed in the male S.R.D.'s, namely: England and Wales, U. S. whites, U. S. nonwhites. But the rates for inaccessible sites are in reverse order, and it is these which have determined the sequence of female all-sites mortality. The allocation of uterine cancers to the inaccessible group is largely responsible for the opposite sequence of the female rates in the two groups of sites. There is, however, a case for including cancers of the cervix, if not all uterine cancers, with the accessible sites.

Among inaccessible sites, the stomach was singled out by Clemmesen[2] as having a great influence on mortality

statistics while "at the same time the certainty of diagnosis here is smaller than for most other frequent cancers. . . . It is of interest to note how this group influences the total cancer mortalities of the three countries (Denmark, Switzerland, and England) and thus to test the validity of international differences in cancer mortality." This author found that the prewar cancer mortalities of Denmark, Switzerland, and England approximated more closely to one another when gastric cancer was excluded from the rates for all sites than when it was included. Clemmesen is evidently of the opinion that the closer set of figures (which exclude gastric cancer) is the more likely to give the true international comparison and that his mistrust of the figures for stomach cancer is justified by his finding. But there is no reason why errors in the diagnosis of stomach cancer need cause the recorded all-sites mortalities of three or four countries to diverge from one another. In fact, differences in what Clemmesen calls the "diagnostic conditions" of several countries could easily lead to recorded death rates being closer to one another than the true rates.

In the present material, differences between the recorded mortality from gastric cancer—whether real or illusory—cannot be regarded as an important factor in differences between the all-sites rates, as can be seen from Table 4. This table shows the result of excluding deaths attributed to cancer of the stomach from the all-sites S.D.R.'s quoted in Table 1.

The range from the highest to the lowest rate is, naturally, reduced by the exclusion of stomach cancers, and in this sense the rates in Table 4 are closer together than the rates in Table 1. But this is not a valid measure of the dispersion of the rates since it ignores their absolute size. The percentage comparisons show that, on balance, international variation is increased rather than decreased by the exclusion of stomach cancers. Thus, we have a result which is almost opposite to that obtained from Clemmesen's material. It would be quite unjustified to assert that these different results must have been caused by the same type of error. A simpler and safer course is to accept the recorded mortalities from gastric cancer as indicating genuine international differences in the incidence of cancers of this site.

DEATH RATES FOR INDIVIDUAL SITES

All international comparisons of the mortality from cancers of particular sites are affected to an unknown extent by differences in the proportion of fatal cancers which are classified under Section 55 of the *International List of Causes of Death* (Fifth Revision)—"other and unspecified sites." In the English figures about three and one-half per cent of all cancers are returned in this group, but in the American figures about seven per cent, with only trivial differences between white and nonwhite. No breakdown of the subdivisions of Section 55 by age, sex, or race can be made from the American figures, but a

TABLE 4

S.D.R.'s Per Million Living Over the Age of 35 from Cancers of All Sites Except the Stomach: 1946–1948

Group	Males		Females	
	Rate per million	Rate as per cent of rate for E. & W.	Rate per million	Rate as per cent of rate for E. & W.
England and Wales	2,842	100	2,395	100
Denmark	2,137	75	2,640	110
U. S. whites	2,424	85	2,580	108
U. S. nonwhites	1,953	69	2,554	107

comparison of crude death rates (both sexes, all ages) is given in Table 5. Although deaths below 35 had to be included in this table, only the populations over the age of 35 have been used. At the cost of slight inaccuracy this gives rates more nearly comparable with the S.D.R.'s quoted in other tables.

TABLE 5

Crude Death Rates Per Million Living of Both Sexes from Cancer of "Other and Unspecified Sites": 1946–1948

Site	England and Wales	United States (Whites and Nonwhites)
Adrenal	3.1	3.4
Bones (except jaw)	41.4	38.7
Thyroid	14.4	12.6
Nose and nasal sinuses	1.2	6.3
Unspecified	74.4	174.9
Section 55 (Total)	134.6	236.0

It can be seen from Table 5 that it is the unspecified sites rather than the four "other" sites which are responsible for the rather larger proportion of cancers allocated to Section 55 in the American figures. The exact composition of this group of cancers of unspecified sites is a matter for speculation, but some clue may be afforded by the proportion of cancers which are allocated to the section as a whole in different age groups. In all three male populations the percentage of cancers allocated to Section 55 decreases with advancing age at death. In England and Wales it falls from 6.8 per cent in the age group 35–44 to 2.4 per cent in the age group 75 and over, for American white males the corresponding percentages are 13.3 and 6.5 respectively. The percentage for English females also shows a tendency to fall, but in the two American female populations it remains at 6 per cent to 7 per cent throughout life.

A conspicuous feature of Table 5 is the crude death rate from cancers of the nose and nasal sinuses, which at 6.3 per million for the United States is more than five times as high as it is in England. This is a far greater contrast than any found among the S.D.R.'s for other sites (see Tables 6 and 7). Cancer of this site has been observed [14] to cause death at, relatively, a very late age; but the population at risk is younger in the United States than in England and Wales. It is, therefore, likely that the true American excess of nasal cancer is quite as great, or even greater, than the crude death rates suggest.

We turn now to a consideration of the individual sites which are specified. The contributions made by 18 male and 19 female cancer sites to the standardized mortality of the three populations are shown in Tables 6 and 7.*

To the figures in these tables may be added four comparable Danish S.D.R.'s (with their associated S.M.A.D.'s).

Males	Stomach	880 (66.7)
Females	Stomach	584 (68.7)
	Breast	568 (60.1)
	Whole of Uterus	430 (56.2)

As might be expected, the sites have a very similar order of importance in England and America, with sites of the digestive system predominating among male cancers and sites of the reproductive system among female cancers.

In the rates for male sites the two principal differences are in cancers of the prostate and of the respiratory system. Cancer of the prostate has an S.D.R. of 245 in England and Wales and is the fifth site in order of importance. But in the United States it has an importance second only to cancer of the stomach, the S.D.R.'s for white and nonwhite males being 351 and 391 respectively.

* A change occurred between 1947 and 1948 in the form of published U. S. statistics on cancers of the respiratory system. This makes it necessary to base S.D.R.'s for the two subdivisions of the respiratory system on deaths occurring in 1946 and 1947 only. For both sexes and in all three populations the sum of these two short period S.D.R.'s is less than the S.D.R. for the whole respiratory system based on three years. This is because respiratory cancer death rates were rising during the period, especially in England. Hence, the two totals marked (1) and (2) in these tables.

TABLE 6

Comparison of Standardized Death Rates (Per Million Living Over the Age of 35) for Cancer of Various Sites Among Males in England and Wales and in the United States: 1946–1948

Site	England & Wales Rate per million	U. S. Whites Rate per million	U. S. Nonwhites Rate per million	U. S. Whites Per cent of England and Wales	U. S. Nonwhites Per cent of England and Wales
Stomach	742	513	625	69	84
Lung and pleura	723	231	151	32	21
Intestine	439	344	223	78	51
Rectum	353	194	118	55	33
Prostate	245	351	391	143	160
Urinary	177	193	121	109	68
Esophagus	137	84	133	61	97
Pancreas	130	142	106	109	82
Liver	103	149	145	145	141
"Other" buccal cavity	93	90	67	97	72
Larynx and trachea	78	183	141	235	181
Tongue	55	35	28	64	51
Skin	49	69	22	141	45
Brain and C.N.S.	44	55	20	125	45
"Other" genital	28	21	30	75	107
Lip	14	18	4	129	29
Mesentery and peritoneum	12	19	14	158	117
Breast	6	7	9	117	150
Other unspec.	123	215	208	175	169
All Sites *	3,551	2,913	2,556	82	72
All Sites †	3,534	2,937	2,578	82	72

* Including respiratory system subtotals based on 1946–1947 only.
† Including respiratory system based on whole three years, 1946–1948.

TABLE 7

Comparison of Standardized Death Rates (Per Million Living Over the Age of 35) for Cancer of Various Sites Among Females in England and Wales and in the United States: 1946–1948

Site	England & Wales Rate per million	U. S. Whites Rate per million	U. S. Nonwhites Rate per million	U. S. Whites Per cent of England and Wales	U. S. Nonwhites Per cent of England and Wales
Breast	597	561	440	94	74
Stomach	437	292	344	67	79
Intestine	414	390	241	94	58
"Other" genital	202	181	112	90	55
"Other" uterine	187	268	524	143	280
Rectum	178	136	122	76	69
Cervix	146	216	429	148	294
Lung and pleura	124	75	56	60	45
Liver	98	183	138	187	141
Pancreas	88	98	75	111	85
Urinary	71	93	83	134	117
Esophagus	58	22	28	38	48
Skin	29	41	19	141	66
"Other" buccal cavity	25	23	28	92	112
Brain and C.N.S.	25	34	12	136	48
Larynx and trachea	21	26	23	124	110
Mesentery and peritoneum	17	20	12	118	71
Tongue	9	8	8	89	89
Lips	1	2	1	—	—
Other unspec.	99	193	197	195	199
All Sites *	2,826	2,864	2,892	101	102
All Sites †	2,832	2,872	2,898	101	102

* Including respiratory system subtotals based on 1946–1947 only.
† Including respiratory system based on whole three years, 1946–1948.

In England and Wales the second place in order of importance is taken by cancer of the lung and pleura, with an S.D.R. of 723, approximately three times the rate for white Americans and five times the rate for nonwhite Americans. *Per contra* the American S.D.R.'s for cancer of the larynx and trachea are substantially higher than the English rate. Much publicity has been given recently[5] to an apparent association between cigarette smoking and lung cancer. Though cigarette consumption may underlie this difference between England and America, it cannot be a wholly straightforward connection; see the following figures[1] of average annual cigarette consumption per adult:

1939	United States	1,750
	United Kingdom	1,955
1949	United States	3,188
	United Kingdom	2,029

The chief disparity among female rates occurs in respect of cancer of the uterus. In the nonwhite list "other" uterine cancer is the largest, and cervical cancer the third largest item. Together these sites make up an S.D.R. for uterine cancer of 953 in the nonwhite population. The corresponding rate for white Americans is only 474, while for women in Denmark (430) and England (333) the rates are lower still. Cancer of other female genital organs, however, is more common in England than in America.

In the right hand columns of Tables 6 and 7 the sites S.D.R.'s of the two American populations are expressed as percentages of the corresponding English rates. (No comparison has been attempted for cancer of the lip in women because of the very small numbers involved.) The following relationships will be seen to hold good for both sexes:

a. Both American rates higher than England and Wales—larynx and trachea, other and unspecified, liver (and possibly nose—see foregoing).

b. Both American rates lower than England and Wales—lung and pleura, rectum, esophagus, tongue, stomach, intestines.

c. U. S. white higher and U. S. nonwhite lower than England and Wales—skin, brain, and C.N.S.

CANCER MORTALITY AND ECONOMIC STATUS

The comparisons of individual site mortalities which can be made from the data in Tables 6 and 7 are so numerous that some grouping of sites is desirable. One classification of cancers is by the relative frequency with which they occur in the different strata of society. The Registrar-General[15] has divided cancer sites into three groups on the basis of the English statistics. The three groups are as follows:

a. Sites with the highest mortality in the "unskilled," i.e., poorest classes. This group comprised the upper alimentary canal, also the larynx, skin, scrotum, penis, uterus, vulva, and vagina.

b. Sites with the lowest mortality in the unskilled classes. These were breast, ovary, testes, thyroid, and mediastinum.

c. Sites with no definite relation between mortality and social class. This included cancers of the intestine and rectum, together with the lung, liver, urinary system, prostate, brain, gallbladder, pancreas, bones (except jaw), and other sites.

There is a clear analogy between the Registrar-General's social grading and the different economic status of the white and nonwhite populations in America. It is therefore of interest to inquire whether the differential mortality of the two main racial groups in the United States is consistent with the Registrar-General's classification of sites. The sites used in this study are in many cases not sufficiently precise to suit the question (e.g., "other male genital organs" include scrotum from group (a) and testes from group (b)). The S.D.R.'s for sites which seem to have been suitably defined, and where there is a fair degree of contrast between the two American rates, are listed below. They are marked *Agree* or *Dis-*

agree according to whether or not the high-low social class difference corresponds to the white-nonwhite difference.

a. Highest in unskilled classes—*Agree;* esophagus, males and females; stomach, males and females. *Disagree;* lip, males; tongue, males; other buccal cavity, males.

b. Highest in skilled classes—*Agree;* breast, females; other female genital organs (here identified with ovarian cancers which preponderate in this group).

c. No definite relation between mortality and class—*Disagree;* (because white S.D.R.'s are markedly high) intestine, male and female; rectum, male and female; lung, male and female; pancreas, male and female; liver, female.

Thus, out of the 19 comparisons made, 7 agree and 12 disagree. This shows that expectations derived from English experience cannot be applied uncritically to the mortality of other countries. The mortality gradients observed between the social classes in England may be due to environmental differences which have no parallel in the United States. Alternatively, the analogy may be a fair one but the expected effects may be overlaid by racial factors.

A special interest attaches to the seven death rates for which mortality differences between whites and nonwhites are consistent with the social gradient of mortality in England and Wales. For it seems in these cases that a high or low rate is truly characteristic of a high or low economic status. Consequently the comparison of English with American rates will, in each case, imply some social comparison between the two countries. Of these seven rates, the three which refer to female sites only—uterus, breast, and other female genital—agree in likening American mortality to that of the lower rather than the higher classes in England. The finding for uterine cancer may be due in part to the differential fertility of the social classes in England, where there is a low birth rate at the upper end of the social scale, and where the birth rate for the country as a whole is lower than in America. But the contrast is greater than might have been expected if differential fertility were the only factor, for at current rates the number of children born to English, white American, and nonwhite American women are in the ratio 1: 1¼: 1½, while the incidence of uterine cancer is in the ratio 1: 1½: 3. The remaining four rates—for cancers of the stomach and of the esophagus in males and in females—all belong to the group for which mortality is higher in the poorer classes, and all show a comparison which is unfavorable to England.

ESTIMATED MEAN AGE AT DEATH BY SITE

Table 8 compares the S.M.A.D.'s in the American populations with the corresponding S.M.A.D. in England. Once again no estimate is made for cancers of the lip in women.

The upward bias in all the S.M.A.D.'s (which results from ignoring deaths below the age of 35) is stronger for nonwhites than for whites, especially in the case of such "early" sites as the cervix and the brain and C.N.S. Despite this fact, the mean age at death of the nonwhites is estimated to be lower than in either of the white populations.

When the various sites are considered in order of the *relative* age at death, cancer of the respiratory system is again found to show international contrasts. Mortality from cancer of the lung and pleura, which is much higher in England, is also associated with an appreciably earlier S.M.A.D. in England. With cancer of the larynx and trachea the position is reversed, American mortality being higher and occurring at an earlier age than in England and Wales.

This raises the question as to whether there may be a general tendency for those factors which cause fatal cancers of a particular site to occur in excess also to cause relatively early deaths

TABLE 8

Standardized Mean Age at Death by Site

Site	Males			Females		
	England and Wales (years)	*U. S. Whites younger (−) or older (+) than E. & W.*	*U. S. Nonwhites younger (−) or older (+) than E. & W.*	*England and Wales (years)*	*U. S. Whites younger (−) or older (+) than E. & W.*	*U. S. Nonwhites younger (−) or older (+) than E. & W.*
Stomach	63.8	+2.3	−2.2	65.6	−2.2	−4.2
Lung and pleura	58.4	+2.1	−0.8	60.5	+1.6	−3.7
Intestine	66.7	−1.0	−3.7	66.1	−0.9	−4.9
Rectum	67.5	−2.0	−5.6	64.8	−0.3	−6.3
Prostate	70.6	+1.6	−3.4	—	—	—
Urinary	64.7	+0.6	−3.8	64.8	+1.3	−3.7
Esophagus	67.6	−2.5	−8.7	64.7	+2.1	−7.8
Pancreas	64.8	−0.6	−4.5	65.3	0.0	−5.3
Liver, etc.	65.5	−0.1	−5.1	65.7	−0.2	−5.3
"Other" buccal cavity	68.4	−2.9	−9.6	63.9	+1.2	−5.1
Larynx and trachea	65.8	−5.3	−7.9	61.1	+1.1	−3.2
Tongue	69.3	−4.4	−10.6	65.5	+0.4	−5.3
Skin	68.1	+0.7	−6.8	67.3	+1.7	−3.1
Brain and C.N.S.	51.6	+1.2	−0.3	51.4	+1.9	−1.5
"Other" genital	60.2	−1.9	−4.2	58.6	+0.1	−3.7
Lip	71.7	−2.0	−7.0	—	—	—
Mesentery and peritoneum	55.1	+1.6	−1.4	58.7	+2.1	−2.1
Breast	64.8	+0.2	−4.9	59.5	+0.6	−2.6
Cervix	—	—	—	57.0	−1.2	−2.7
"Other" uterine	—	—	—	60.8	+0.2	−4.0

from cancer of the same site. For example, Doll and Hill have suggested[5] that the risk of lung cancer may be a function of the total number of cigarettes smoked and, if this is true, cancer of the lung should develop earlier as well as more frequently in heavy smokers. In a less obvious case Jacobsen[7] has given reason to believe that when there is a hereditary predisposition to cancer of the breast the disease will appear at an earlier average age than when there is no such predisposition. Thus, in two populations the one in which the hereditary taint was the more widespread would seem to have both more and earlier deaths from breast cancer.

Many complicating factors besides an unavoidable lack of precision in the estimated S.M.A.D. would tend to prevent such a tendency from appearing in national statistics. Identical carcinogenic stimuli might affect different sites in different populations. Conversely, an excess of cancers of the same site might result in two populations from quite different causes. However, an attempt has been made by the method of rank correlation to test for the existence of an association between the frequency and timing of fatal cancers. With each possible pair of populations A and B (six in all) the sites have been ranked, first by the ratio of the S.D.R. in A to the S.D.R. in B, and second by the interval in years obtained when the S.M.A.D. for B is subtracted from the S.M.A.D. for A. Each pair of rankings was then correlated, and the resulting coefficients are shown in Table 9.

None of the individual coefficients is of significant magnitude, but five of the six are positive, indicating a slight tendency for relatively common cancers to cause death at a relatively early age. This tendency appears to be rather stronger for females than for males, the highest coefficient obtained being that for the comparison of the two popula-

TABLE 9

Correlation Coefficients Between Rankings of Cancer Sites

Populations Compared	*Males (18 Sites)*	*Females (18 Sites)*
England and Wales with U. S. Whites	−0.104	+0.334
England and Wales with U. S. Nonwhites	+0.015	+0.100
U. S. Whites with U. S. Nonwhites	+0.180	+0.214

a. By relative frequency of deaths in two populations, and
b. By relative age at death in two populations.

tions of white women. Taken together these coefficients suggest that the "more-and-sooner" association may apply to the comparison of populations whose circumstances are similar.

DO THE MORTALITIES FOR SEPARATE SITES TEND TO "BALANCE OUT?"

A number of writers have been impressed by the fact that all-sites cancer death rates often show less contrast, as between countries, than do the death rates for some individual sites. This has led some to believe that total cancer mortality may be genetically controlled, while environmental influences determine the localization of cancer in specific cases (Cramer,[4] Peller,[12, 13] but see also Conrad and Hill [3]). According to this view, a population which suffered an excess of cancers of one particular organ might enjoy a compensating deficiency of cancers of some other organ or organs. We will call this idea the "compensation theory," and attempt to distinguish two ways in which it may be held. (a) In the first place, it may be held that there are *particular* pairs of organs or groups of organs between which a complementary relation exists, such that mortality from cancers of the one always bears an inverse relation to mortality from cancers of the other. (b) In the second place, it may be held that cancer mortality is subject to a general law so that the stimuli which produce an increase in cancer mortality of any site will never produce a corresponding increase in total cancer mortality. These two versions of the theory are not wholly distinct, but from the point of view of investigation and proof there is an important difference. In the form of (a) the theory can never be subjected to a purely statistical proof, unless it is known *a priori* which pairs of organs stand in the alleged complementary relation. But in its second, more general form, as expressed in (b) above, the theory can be subjected to a simple statistical test for which the present data supply suitable material.

The question to be answered is, are the site mortalities independent of one another? If the compensation theory is correct, they are not independent; and it should be possible to demonstrate a negative correlation. Any positive correlation between site mortalities would be evidence against the theory. Because of the association of certain cancers with certain mean ages at death it follows that any balancing out of mortality between one site and another may also be regarded as a balancing out between one age-period and another. Therefore, if the compensation theory is correct, it should also be possible to demonstrate a negative correlation between age-specific death rates. The appropriate tests can be made by the analysis of variance. The quantities needed for the tests and the results obtained are shown in Table 10, the first two lines of which are concerned with compensation between sites and the last two with compensation between age-periods. (The value given to "variance of all-sites rates" differs from that given to "variance of rates for all ages." This is because cancers of "other and unspecified sites" had to be omitted from the first tests, in order to eliminate the risk of a spurious compensation between sites.)

TABLE 10

Test for the Existence of a Tendency Toward Compensation

† Compensation Between Sites	Sum of Variances of Rates for Each Site	Variance of All-Sites Rates	Ratio of Larger to Smaller Variance	Degrees of Freedom	Significance Level of Variance Ratio
Males	148,358	303,634	2.05	2, 36	$0.20 > P > 0.05$
Females	80,177	790	101.52	38, 2	$P < 0.01$

‡ Compensation Between Ages	Weighted * Sum of Variances of Age-Specific Rates	Variance of Rates for All Ages	Ratio of Larger to Smaller Variance	Degrees of Freedom	Significance Level of Variance Ratio
Males	120,721	259,921	2.15	2, 10	$0.20 > P > 0.05$
Females	69,195	1,106	62.56	10, 2	$0.05 > P > 0.01$

* The variance for each age-period is weighted by a factor p^2 where p is the proportion of the corresponding age group in the standard population.
† Between site mortalities.
‡ Between age-specific mortalities.

In the first line of Table 10, which refers to males, it will be seen that the variance ratio fails to attain a significant value, and the male-site mortalities ought therefore to be regarded as independent. Of the two quantities compared it is the "variance of all-sites rates" which is the larger, indicating a slight tendency toward a positive association between site mortalities. It is therefore impossible to argue, on the basis of the present data, that there is any general tendency toward compensation between male sites. The third line of Table 10 gives a similar result, suggesting that cancer mortality in each age period is independently determined, with the possibility that a high mortality at one age may be reinforced by a high mortality at other ages.

The results in the second and fourth lines of Table 10, which refer to females, are completely different, and are in accord with the theory of Peller and others. In each of these cases it is the sum of variances which is the larger quantity, and in each the variance ratio is significantly high. This shows that neither the site mortalities nor the age-specific mortalities of females can be regarded as independent variables. Instead they depend on each other in such a way as to restrict the variation of the death rates for all sites and for all ages. This finding is due in part to the well known negative association between breast cancer and uterine cancer. But even when this association is discounted by treating the breast, uterus, and other genital organs as a single site, a variance ratio of 71.7 is obtained (degrees of freedom now 30 and 2) which still lies beyond the 5 per cent level of P.

The results obtained for males do not support the compensation theory. Those for females may constitute support for the theory or may be a transitory phenomenon, only appearing during a phase in the fluctuation of mortalities when the all-sites rates of these three female populations happen to pass near one another. But if the appearance of compensation in the female rates is to be taken at its face value, and if some rationalization of this finding is required, then it would be wise to avoid postulating a separate biological law for each sex. One authority, Kennaway,[8] has gone so far as to suggest that a law of compensation may operate between sexes in such a way as to bring together the all-sites rates for men and for women. It would be well, therefore, to assume that if there is a law of compensation, then it must apply to both sexes, but that its action on male mortality rates is obscured by stronger environmental factors which cause *net*

differences between the all-sites rates of male populations. This amounts to an assumption that the life of women in a modern industrial civilization is, so to speak, closer to the state of nature than is the life of men.

SUMMARY

Cancer death rates and mean ages at death for the years 1946–1948 are presented in a form which permits comparison between England and the white and nonwhite populations of the United States. One of the strongest contrasts between England and America is in cancers of the respiratory system: deaths from lung cancer occur in excess and at a relatively early age in England; deaths from cancer of the larynx and trachea occur in excess and at a relatively early age in America. Contrasts between all-sites rates are greater for males than for females, and greater for cancers of "accessible" than "inaccessible" sites.

There may be a general tendency for relatively frequent deaths from cancer of a particular site to be associated with relatively early age at death, but this is not established.

Some—but only some—of the differences between cancer mortality of the upper and lower social classes in England and Wales can be matched by corresponding differences between the white and nonwhite populations of the United States.

A test is made of the hypothesis that mortalities from cancer of different sites tend to "balance out" in the all-sites mortality. The death rates for females, but not those for males, support this hypothesis.

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NURSES UNITE FOR SERVICE

IN these United States it may sometimes seem appropriate to alter a familiar quotation to read "of making many *organizations* there is no end."[1] Certain it is that as our healing arts professions have advanced in skill and knowledge they have recognized a need to associate in groups of similar interest within a profession itself. In consequence, we have seen the creation of many specialized organizations which by concentrating upon carefully defined areas of common interest have made noteworthy strides in standards of performance and advances in knowledge that have greatly benefited the consumer of the profession's practice. Later, there may come to some groups an awareness that similarities in interest, in responsibility, and in opportunity for service transcend differences. Then there emerges a growing desire for "togetherness" which in turn supersedes the earlier urge for separateness. Perhaps this may be called maturing. In any case, when such an idea takes hold in a profession there follows a period of study, discussion, planning, replanning, and finally the taking of action to chart a new course (or to adhere to an established one).

From such a period, the organized profession of nursing is just emerging; for at the 1952 Biennial Convention in Atlantic City in June decisions were made which clearly indicate that professional nursing believes it can fulfil its function more effectively by simplifying its organizational structure.

The story of all that took place during the period which preceded this decision has already been told in nursing periodicals and need not be rehearsed again.

Nevertheless, colleagues in the other healing arts, as well as that valued public which represents consumers of nursing practice, have a stake in the results of nursing's change in structure and were, to no small degree, factors in this change. For this reason it seems fitting to take note of the transformation of five national nursing organizations into two associations, designed to fulfil the major functions of nurses and nursing through appropriate autonomy and coördination. In the American Nurses' Association are now centered "those functions which should be

the sole responsibility of the members of a profession," while the National League for Nursing has accepted "those functions which the members of any profession should share with the consumers of their product and with allied professional workers."[2] Thus, the American Nurses' Association will "define the functions of nurses and promote standards of professional nurse practice,"[3] using a wide range of activities to achieve this aim and serving as the official representative of American nurses in the International Council of Nurses. Beside this great organization of nurses as individuals there now works the National League for Nursing whose object is "to foster the development and improvement of . . . . organized nursing services and of nursing education"[4] and whose membership includes professional nurses, non-nurses, organized nursing services, and schools, divisions, and departments that provide educational programs in nursing. A Coördinating Council has been created "to promote the coördination of those programs that are of common concern to the National League for Nursing and the American Nurses' Association."[5]

These changes, which have caused the National Association of Colored Graduate Nurses, the Association of Collegiate Schools of Nursing, and the National Organization for Public Health Nursing to embark upon dissolution proceedings, following the acceptance of their members into the two ongoing associations with full rights and privileges, did not occur without profound thought, discussion, and planning. More than six years of hard work have gone into the preparation of this plan.

It became abundantly clear, as session followed session in the convention, that the nurses of America want to work together as nurses for the profession and with the public and allied professions for organized nursing service and education.

At the first meeting of the National League for Nursing the theme of the speaker was appropriately entitled, "The Meaning of Coöperation."[6] Out of a wealth of profound wisdom one sentence emerged to set a keynote for the new structure. "Goodness is that form of behavior which confers survival benefits upon others."[7] All through the years of preparation for this new structure there moved the strong spirit of service among nurses, as it moves in other professions. By the 1952 decision, that spirit aligns itself more closely than ever before with those other professions and with the public, in whose service alone all find fulfillment.

The true evaluation of this decision lies of course in the future. It will perhaps be best made by patients and the allied professions rather than by nurses. If in 1975, patients continue to display the confidence in a nurse's skill and understanding which constantly fills today's nurses with humility; if in that time to come, a broad segment of the non-nurse public is found participating actively in planning and conducting the health services of our nation which involve nurses; if organized nursing services and schools, divisions, and departments that provide educational programs in nursing, then are the active concern of both the non-nurse citizens and the other healing arts professions, as well as of nurses themselves; if professional nurses truly join with all those involved in the care of the sick and the promotion of health so that the word "team" achieves its richest meaning, then indeed will the evaluation sheet of this 1952 decision merit the word—good.

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1. Ecclesiastes, XII, 12.
2. Report of Joint Coördinating Committee on Structure, June 16, 1952. Pearl McIver, Chairman.
3. ANA By-Laws, adopted June, 1952—Article I, Section 2–1.
4. NLN Certificate of Incorporation, adopted June, 1952—Statement 3.
5. NLN By-Laws, adopted June, 1952—Article XVI, Section 3.
6. Address NLN: Professor Ashley Montagu, Chairman of the Department of Anthropology, Rutgers University, June 20, 1952, Atlantic City, N. J.
7. *Ibid.*

THE RESEARCH PROGRAM OF THE U. S. PUBLIC HEALTH SERVICE

THE writer is old enough to recall the days when the great private foundations were under political attack; and when their generous and constructive grants for health and education were denounced as "tainted money." Today, there are politically animated groups which fear—or pretend to fear—governmental appropriations for similar purposes and who describe such appropriations in very similar terms. To those who knew the groups of foundation trustees and executives, the smear campaign directed against the foundations was sheer nonsense; and to those who understand the American people, the present opposition is equally unjustified. It is, after all, our government and we know quite well that it will continue to be more than responsive to the popular will.

A recent study which comes to us from the National Research Council [1] gives a striking picture of what is happening in the fields with which we are directly concerned. It is estimated that in 1946, $1,871,000 of government funds and $2,436,000 of private funds were available for research grants in medical and allied fields. In 1951 the government funds had risen to $21,320,000 and the private funds to $11,680,000—a tenfold increase in government funds and a fivefold increase in private funds. The special fields which, in 1951, received the largest sums were cancer ($6,691,000); infectious diseases ($5,612,000); and cardiovascular diseases ($3,807,000).

We, in the APHA, are particularly interested in the role played by the U. S. Public Health Service, not only by its program of grants-in-aid, but even more by the investigations of its own staff, which are, of course, not involved in the research grants cited above.

Although the Service had its beginning in 1798 with the establishment of a medical care program for merchant seamen, it was not until 1887, after the pioneer work of Pasteur and Koch, that Dr. Joseph A. Kinyoun established its first bacteriological laboratory. In the following year he demonstrated the utility of this new science in the quarantine responsibilities of the Service by identifying the cholera vibrio in the stools of immigrants. Over the years have come many important contributions from the men and laboratories of the Public Health Service. These reflect the evolution of modern health practices, the widening interests, and the increased research responsibilities placed on the Service by the Congress.

Important research activities are conducted by the Service in laboratories and field studies throughout the United States and in the Territories and some foreign countries. The bulk of the work, however, is done at the laboratories of the National Institutes of Health in Bethesda, Md. The NIH also administers an extensive program of grants-in-aid and fellowships. Under this program, medical and related investigations in a large proportion of nonfederal research institutions in this country are now receiving financial assistance. In addition, about 450 research fellows are receiving training stipends annually. The Service is aided in its administration of these programs by the advice of nearly 300 distinguished nonfederal scientists, aided by a smaller number of businessmen, educators, and other representatives of the general public interest.

One new PHS development deserves special mention. This is the construction of the Clinical Center at Bethesda, which will provide facilities for coördinated clinical-laboratory investigations of the chronic diseases and certain stubborn infectious diseases on a scale never before attempted in a single institution. The Clinical

Center will receive its first patients in the spring of 1953. It is to be a "national" rather than a "federal" medical science resource; and its facilities are to be available to qualified "visiting scientists" from all sections of the country.

Similar evidences of the growth in scope of research and its importance to public health are found in other parts of the Service. The Communicable Disease Center with headquarters at Atlanta, Ga., conducts numerous laboratory and field investigations and works closely with state and local health agencies to bridge the gap between laboratory findings and their practical application. The Environmental Health Center and the Occupational Health Laboratory at Cincinnati are studying the growing number of health problems associated with industrialization and technological advances. The importance to our national interest of the Arctic Health Research Center at Anchorage, Alaska, is obvious, as is also the work of PHS experts in many foreign lands. In coöperation with the State Department, the World Health Organization, the Pan American Sanitary Bureau, and other agencies concerned with improving the health of people everywhere, these scientists are helping world peace as well as world health.

In recent years the Congress has approached medical research on a very generous and bipartisan basis. Individual leaders and whole organizations representing private interests in medicine, hospital administration, and laboratory research have generally given active support to these expansions of the Public Health Service's research program. The strong emphasis on fundamental problems and the scrupulous care with which the Service avoids authoritarian direction of its own research scientists, of those to whom it grants federal funds, and of the other organizations with which it collaborates, help to account for this fact.

The most critical observation one might make of health and medical research in the United States today is that there is imbalance between studies of the biological and of the social components of health problems. It is hoped that this may be corrected in the future—not, by reducing the amount and vigor of medical-biological research, but rather by increasing public and professional interest in research which employs the social science disciplines.

What results have been actually accomplished by the far-reaching program of the USPHS? "By their fruits ye shall know them." Here is a brief list of a few of the specific advances which have come to us from this group of able scientists, including only a fraction of those which are most outstanding.

First bacterial diagnosis of cholera in the Western Hemisphere.

Pioneer work on anaphylaxis.

Discovery that the ground squirrel and other sylvatic rodents were hosts of bubonic plague.

Identification of the organism causing tularemia and studies on etiology.

First association of pellagra with diet. Discovery of cause, prevention, and cure of the disease.

Development of the first effective vaccine against Rocky Mountain spotted fever—the first vaccine against any rickettsial disease.

Discovery that typhus fever is transmitted by rat fleas as well as body lice.

Development of hyperimmune rabbit serum—the first agent for use in treatment of Rocky Mountain spotted fever.

Development of a vaccine against typhus.

Isolation of the causative virus of St. Louis encephalitis.

First successful transmission of the poliomyelitis virus to the cotton rat and the laboratory white mouse.

First transformation of normal mammalian cells—grown in flasks as tissue cultures—into cancer cells that would invade and kill animals.

First demonstration of the relation of fluorides in drinking water to the incidence of dental caries.

Cultivation of the virus of mumps and advances in developing an immunizing vaccine.

Identification of "Q" fever as identical with a rickettsial disease of Australia; elucidation of the epidemiology of "Q" fever in California; and the role of milk in its transmission.

Preparation of electronic pictures which for the first time reveal the internal structure of a molecule.

More than twenty years ago, when Andrew Mellon was secretary of the Treasury, he asked a small group of experts, with William H. Welch as chairman, to evaluate the research program of the USPHS (then in the Department of the Treasury). The writer was a member of this group and recalls clearly Dr. Welch's report to Secretary Mellon at the close of our conferences. Dr. Welch said that no other single institution in the world was making such far-reaching contributions to research in the field of health as the USPHS. Dr. Welch was a kindly man; but he was also a scientifically very careful man. What he said was true in the 1920's. It is true today.

1. Diegman, S. L., and Miller, E. *Science* 115:321–343 (Mar. 28), 1952.

QUACKERY IN THE FIELD OF NUTRITION

THE Utah State Agricultural College has recently issued a bulletin entitled *Facts About Foods and Nutrition* which calls attention to an important problem in the public health field.

This bulletin[1] points out that "there are today, many sources of truth. There are even various legal protections against food frauds. Nevertheless, some fail to stop at the red light. For example, people rush to buy 'health foods' even though both the Food and Drug Administration and the Council on Foods of the American Medical Association have been emphatic in condemning extravagant and misleading use of the terms 'healthful' and similar expressions. The Food and Drug Administration states that:

'The use of the word health in connection with foods, constitutes a misbranding under the Food and Drug Act. The use of this word implies that these products have health-giving or curative properties, when in general, they merely possess some of the nutritive qualities to be expected in any wholesome food product. The label claims on these products are such that the consumer is led to believe that our ordinary diets are sorely deficient in such vital substances as vitamins and minerals, and that these so-called health foods are absolutely necessary to conserve life and health.'

"According to the Council on Foods:

'The term health food and equivalent claims or statements to the effect that the food gives, or assures health are vague, misinformative and misleading. An adequate or complete diet and the recognized nutritional essentials established by the science of nutrition are necessary for health, but health depends on many other factors than those provided by such diet, or nutritional essentials. No one food alone is essential for health. There are no health foods.' "

Unfortunately, such legal controls as are available in connection with printed matter cannot be applied to propagandists from the lecture platform, over the radio, on the television, and over-the-counter. The reliance that sick people, who should be seeking competent medical advice, place on these nostrums is quite frightening. Many of these claims are passed by word of mouth rather than appearing on packages or in circulars. This makes prosecution by the Food and Drug Administration difficult, if not impossible.

The sales campaign designed to promote the sale of special "health foods"—usually involving high costs—is especially serious in these days of rising food

budgets. All too often family food budgets are pared down to buy pills, powders, and "special health foods" at the expense of a wide variety of wholesome and nourishing foods required for an adequate diet as determined by modern scientific standards. Often the high pressure selling in which these nutrition quacks indulge frightens people into believing that a diet of common ordinary foods is inadequate and must be supplemented with fancy preparations.

Perhaps even more serious as a health menace growing out of the extravagant claims advanced by many of these propagandists is the tendency to promote the use of unbalanced diets seriously lacking in basic nutritional essentials. The Utah bulletin notes some specific points in the following tabulation:

1. Diets without milk.
2. Raw milk in the diet. These raw milk advocates recommend that milk not be pasteurized, yet use dried milk which is processed at a temperature about 50° F. higher than that used in the pasteurization of milk.
3. Use of small amounts of yogurt to replace other forms of milk.
4. Diets without meat.
5. Diets without eggs.

Here are some of the food fads which are probably harmless from the standpoint of nutrition, but which are taxing both the time and money budgets needlessly:

1. Use of only freshly home ground wheat. Some of these faddists claim that white flour is poison and that it causes alcoholism.
2. Use of raw sugar and black strap molasses.
3. Use of liquid vegetable diet.
4. Use of brewer's yeast as the main source of thiamine.
5. Use of vitamin concentrates rather than natural foods for vitamin supplies.
6. Rejection of aluminum utensils as safe cooking ware.
7. Use of home grown bean sprouts.

Federal and state regulations cannot deal adequately with these problems. Only through a vigorous educational program will the public at large become aware of the falsity, and even danger, in the extravagant claims of so-called "food experts." In the fall of 1951, the Special Health and Medical Services Committee of the Association of State and Territorial Health Officers adopted a resolution commending the Food and Drug Administration for the steps it had taken to restrain use of extravagant therapeutic claims for vitamin and mineral diet supplement preparations, condemned the misuse of writings of recognized authorities as purported support for such false claims, and urged action by all appropriate federal, state, and local public health agencies against quackery in the nutrition field.

Here is a job in the field of public health which is urgent. It requires the help and support of all of us. Public health workers can seek authoritative sources for facts about food and nutrition; then by sharing this information with coworkers, family, and friends, they can combat and help stamp out this dangerous propaganda that is being fostered by mercenary and "faddist" members of our society.

1. *Facts About Foods and Nutrition. Utah State Agricultural Extension Bull.* No. 226. Reprinted April, 1951. 30 pp.

LETTER TO THE EDITOR

TO THE EDITOR:

"The Deadline of Sixty-five" expresses a popular and justifiable concern regarding the arbitrary choice of any age for compulsory retirement. Your discussion of variations in aptitudes and abilities with increasing age is well taken. The conclusion that most old people can be assimilated into an industrial organization seems logical.

Two very real problems exist, about which I have seen no comment. First, many employees are unable for medical reasons to work until 65 years. I get the impression that most of those discussing this problem assume that a large percentage of those retiring at 65 should go on. Actually, if objective testing measures (not only regarding medical factors but also job performance, etc.) are devised and instituted, a much higher percentage of persons between 50 and 65 years of age are going to be retired than are at the present time. During 1951 approximately 1 per cent of our male employees between 50 and 60 years of age were retired prematurely for medical reasons. Of those between 60 and 65 years, 2.5 per cent were similarly retired. Sickness-absenteeism represents a greater cost for these older workers. Not only do they receive on the average a higher pay, but they also lose a disproportionate number of days. Thus, while 50 to 60-year-old employees made up 21.2 per cent of our employee population in 1951, they were responsible for 29.5 per cent of the total lost days. Males 60 to 65 years of age made up 5.6 per cent of the total employee group and lost 13.2 per cent of the total sickness days. A little extrapolation will suggest that sickness costs would climb precipitously for still older groups.

The second problem which has never been faced realistically is the optimal utilization of residual abilities. The worker himself can rarely stand the emotional shock, for such changes are usually demotions. He does not want to accept the pay ordinarily given for the lesser responsibilities. Extremely few situations exist in industry where the employee population is sufficiently fluid to permit the placement of such persons in any reasonable period of time.

We are constantly seeking objective measures of physical fitness, but remarkably few practical ones are in existence. I am sure that all would agree that investigations designed to establish criteria for the proper utilization of the older worker are much needed.

LEO WADE, M.D.,
Medical Director
Esso Standard Oil Company,
New York, N. Y.

May 23, 1952.

STUDY OF DEPARTMENT OF HEALTH, CITY OF NEW YORK

The following review of an extensive report made of the Department of Health, City of New York, at the request of the Mayor's Committee on Management Survey, has been prepared at the request of the managing editor by George T. Palmer, Dr.P.H., presently consultant in Public Health Training and Administration, Division of Local Health Service, California State Department of Public Health, San Francisco, and formerly deputy commissioner of Health, New York City Department of Health.

The report was prepared in 1951 by a team composed of Ira V. Hiscock, Sc.D., Roscoe P. Kandle, M.D., Hugh R. Leavell, M.D., and Abel Wolman, Dr. Eng. They were assisted by more than 25 staff consultants.

New York, the largest city in the world, has just had its Health Department examined. This is a sizable task in an area of 8 million residents, a population greater than 90 per cent of our states. The Department has 5,000 employees and a budget of $17 million.

The examiners are people of high quality. They had assistance from an impressive array of consultants. The final report is a remarkably well presented document. It is comprehensive. It is good writing. It is incisive. It is temperate and reasonable in tone; yet, it does not mince matters. It assesses the present-day organization and program, and it also peers ahead into the future.

Critical as it is of the Health Department itself, its severest castigation is centered on two other city departments, the Bureau of the Budget and the Civil Service Commission. This pungent sentence from the report tells the story:

> The unfortunate results of mediocrity, frustration of capable workers and lack of effectiveness due to poor personnel practices were met at every turn in this survey.

The Budget Bureau gives over-all approval to the budget in the first place and then exercises finer discrimination at the time the detailed requests are made. In this instance, it has apparently held a very tight rein. In fact, with a budget of 17 million, the Department was allowed to spend only 13.6 million. As the report states:

> The inexplicable delays and apparent capricious decisions of the Bureau of the Budget have direct results in waste and inefficiency.

Civil Service commissions in general are inclined to accept experience in lieu of formal education. They thus supposedly play fair with the person who cannot afford a college education. But where is their first loyalty? Is it to the prospective employee, or is it to the community which wants competent and suitable people selected for its governmental positions?

In New York City there has been pressure to fill positions at a lower grade of pay, thus securing persons with lesser qualifications. The staff grade of public health nurse has been wiped out. There remains only the staff grade of graduate nurse. This policy means that programs have to be adjusted to what the nurses are capable of doing. The surveyors recommended no increase in budgeted positions until a thorough reorganization of the Bureau of Nursing is well under way.

Drastic revision of laws and rules relating to Civil Service and personnel administration is recommended.

As to organization, there are recommendations that the commissioner's term be increased to six years and that on the Board of Health of five or seven members, no single business or professional group should constitute a majority. The commissioner of health should attend all meetings of the Board and may act as secretary but should not be a voting member. Easier access of staff chiefs to the commissioner and a

broader democratic participation in budget preparation are points stressed.

Twenty years ago the creators of a decentralized district health administration plan had great hopes for the future. These hopes have not been realized. In fact, district health administration is "at a low point, both functionally and administratively." Central office service chiefs with more education, experience, ability, and salary, by and large, have dominated the situation; settled policies for the districts; directed the special programs and staff, and moved staff about from one area to another. The district health officer has not been able to develop programs with the people and agencies of his district under these conditions. Numerous good health officers have joined up, stayed a short while and then left, sour and disillusioned.

It is recommended again that district health officers be put firmly in the local saddle, that districts actually be independently recognized in the budget, and that more services be decentralized. The special service chiefs can still find satisfactions under this plan if they will only think of themselves as consultants, not administrators, just as the special service chiefs of state health departments serve as consultants to local health officers. Why should it not work in a city with more people than the whole State of Texas? It will work if the commissioner gives the nod and will be patient and understanding with the district health officers.

The report urges that the Health Department try harder to work cooperatively with other groups—the visiting nurse associations, city departments, professional bodies, citizens' health councils, and the like.

Thorough reviews of several programs are advocated. The venereal disease program is one. Some feel that available data indicate remarkable progress in this field. Others look at the same data and are not at all convinced. The surveyors think that the time has come to repeat the epochal study made by the American Social Hygiene Association in 1935. Further decentralization of services is urged.

Full steam ahead for the next decade is advocated for the tuberculosis program. The mayor is urged to appoint a Tuberculosis Control Board to include "policy making representatives of the Departments of Health, Hospitals and Welfare, the major p.ivately financed clinics, and recognized leaders of tuberculosis control in the city." The aim is to pool resources and bring together the best minds in developing policies to meet present deficiencies.

Health services for mothers and children are highly complimented. However, more antepartum services are needed, and the city is urged to provide subsidies to assist existing hospitals to enlarge their services, particularly those having more than a thousand deliveries annually. More intensive follow-up work for crippled children is advocated, as well as medical and nursing services in the academic high schools.

The section on health education is a splendid piece of clear, thoughtful, interpretive writing. Reorganization of present policies of the Bureau of Health Education is mandatory. In combating water-borne diseases years back, citizens did not need to take an active part. Their agents in the local government did the job for them. Today in dealing with chronic diseases there is nothing like mass chlorination in sight. Each individual must learn what to do and then he must do it to protect himself. Only one of the tasks of health education is to supply information. The major task is to create learning opportunities for people so that, motivated by their own convictions, they will act. This kind of health education program means working directly with the people in the home neighborhood. It means,

too, professionally trained health educators—not publicity assistants.

The dental program of the Department is one of dental care and dental education for all school children. It is probably one of the largest undertakings of this type in the country. The budget for personnel is over $850,000. In one year reports were available for over 90 per cent of the school children. Sixty-five per cent of these had received dental care, with 52 per cent receiving complete dental care. Of those receiving dental care, 90 per cent used the services of private practitioners. The surveyors urge New York City to fluoridate its water supply.

Nutrition and mental health services are small. Their expansion is advocated.

In a big city there are numerous departments that have an interest in the same subject. Thus, in New York eight city departments are concerned with housing sanitation, four with swimming pools and bathing beaches. It is urged strongly that these interrelationships be reviewed and a clearer delineation of responsibilities worked out.

Retrenchment is advocated in the field of environmental sanitation. The whole question of the control of milk and milk products should be reviewed. Are there compensatory public health values for all the expense incurred? The Board of Health is urged to delve into this matter. Meat, poultry, and shellfish inspections need reassessment.

Wholesale food and drugs should remain centralized, but retail inspections should be transferred to the districts. The newly created Bureau of Sanitary Inspections should be abolished and inspectors assigned to the districts. In fact, with a training program for existing staff and with replacements being limited to those with good basic training, the necessary work could be done with fewer inspectors.

The Department needs a top flight directing sanitary engineer, for responsibilities in this field are many and trying.

The time and effort hitherto expended on investigating dog bites are not believed to yield worthwhile dividends.

The surveyors feel that the part-time staff of the Bureau of Preventable Diseases should be cut in half; the salaries of full-time staff increased; the services generalized and decentralized. A reserve corps of epidemiologists could be called on in emergencies.

Freedom to pay what it takes to get expert research bacteriologists led to the city contracting with a private corporation 10 years ago. But matters have taken a peculiar and wholly unexpected turn. The contractor, Public Health Research Institute, wants to do only basic research, which it does well. The Institute does not want to carry on applied research. The surveyors have some doubts as to whether the Institute is sufficiently responsive to the needs of the city.

The Department laboratory in the meantime is loaded with routine work. The staff could, but they do not want to take on any extra tasks in the field of applied research. Apparently the fires that used to burn in the eyes of bacteriologists have dimmed. William Hallock Park would have been surprised at this turn of events.

The examiners have compounded their prescription in a most discriminating and thoroughgoing manner. No question but what the patient is poorly! He can come back, though, if given time and sympathetic aid from those in power.

This grand city has all the makings for leadership in public health—facilities, equipment, eminent professional advisers in all fields, money. The greatest needs at present are the *desire* to rebuild and the *sustained support* which will permit lacerations to heal and growth to proceed.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

RESEARCH IN THE NURSING WORLD

Nursing Research is being published three times a year by the American Journal of Nursing Company with the sponsorship of the Association of Collegiate Schools of Nursing and the enthusiastic approval of the national nursing organizations. The first issue, June, 1952, describes it as "a medium through which research projects and their results can be reported," whose purpose is "to inform members of the nursing profession and allied professions of the results of scientific studies in nursing, and to stimulate research in nursing."

The first issue's main article is on "The Personal Adjustment of Chronically Ill Old People Under Home Care," a summary of a study made in Chicago and reported by Margery J. Mack as a Ph.D. dissertation. Special sections that might be continuous are Briefs, Research Reported, Incoming Mail, and Researcher's Bookshelf.

In format, the magazine is the same size as the *American Journal of Nursing*, but with a quite different cover and smaller in volume. The original plan for a digest-size magazine was modified as subscriptions rolled in—8,000 before publication and more than 10,000 by July 1.

An editorial board of 20 persons represents the various branches of nursing and the various parts of the country. Helen L. Bunge, dean of the Frances Payne Bolton School of Nursing, Western Reserve University, is chairman.

In order to have readily available information on studies in progress, a clearing house for studies in nursing has been organized under ANA auspices.

American Journal of Nursing Company, 2 Park Ave., New York 16. $2.50 annually.

GIVING SCIENCE WRITERS THE NEWS

It will be remembered that about a year ago the National Association of Science Writers canvassed newspaper editors about their attitude toward science writing. (*A.J.P.H.* 41:10 (Oct.), 1951, p. 1292). The largest number reported special interest in medicine and public health.

Two recent events bear on the same subject. The American Cancer Society under the leadership of its science writer, Pat McGrady, gave an accounting to the public of the more than $20,000,000 spent during the last six years for cancer research by way of a tour of cancer laboratories provided for a dozen of the nation's science writers. From Boston to Minneapolis and 6 way stations, the group visited 18 institutions. Local science writers joined the group in each city. Research directors told candidly of their plans and programs. Reportedly, they "extended a hospitality unprecedented in relations between scientists and science writers." Reportedly, also, the science writers were fully able to "absorb this highly concentrated technical information and present accurate and interesting stories about it."

The other event is a recent forum to discuss recurrent problems of the medical profession in relation to the press. Called by the Woman's Medical College of Pennsylvania for its doctors, nurses,

and students, the forum was addressed by science writers of the Philadelphia newspapers. Among the things they said are:

> The medical profession's code in dealing with the press is static, rigid and completely obsolete.
>
> The profession must learn to tell the public what it is doing and why. . . . This it is expressly forbidden to do under the present code of ethics.
>
> While the medical sciences have been advancing so rapidly, the social sciences, aiding groups of people to get on with each other, have moved forward too. . . . The medical profession has studiously avoided finding out what are the techniques of mutual understanding.
>
> We'll get the story anyway. Why not get it at the right source, so we can be certain of our facts?
>
> Legitimate medical news coverage most certainly is not unethical.

A CHAPTER IN PUBLIC HEALTH HISTORY

"Before the landmarks of the present are lost in the mist of time," *News* of the University of North Carolina School of Public Health has recorded briefly the history of that school as a training center for the public health profession. Appearing in the 1951–1952 winter issue (4:1) and illustrated both with charts and informal photographs of persons and places, the article is entitled "Shoot at the Moon." It tells of the contributions of such giants as Rosenau, Reynolds, Baity, Brown, Wright, among others, as well as of current developments.

In the 15 years of the school's history 1,658 students have been regularly enrolled, of whom 515 received graduate degrees. The school has had a total of 57 faculty members, of whom 32 are currently on the staff. The only one who goes back to the beginning is Herman G. Baity, Sc.D., professor of sanitary engineering. The author, anonymous, expresses the hope that "others of the 9 universities (with schools of public health) . . . will write their records for the new history of public health."

ANALYZING MORTALITY DIFFERENTIALS

"Helpful to anyone seriously considering ways and means of improving health conditions in the state," is how the foreword describes *Mortality Differentials in Michigan* (Special Bulletin 367). This bulletin is a companion publication to *Health Needs and Health Care in Michigan* (*A.J.P.H.* 41, 8:1006 (Aug.), 1951), also prepared by the Department of Sociology and Anthropology of Michigan State College.

Because Negroes, small cities, and rural areas were found to have higher death rates than white and urban groups, concentration of greater health effort on the former is recommended. These efforts should be chiefly in the direction of making modern health and medical facilities equally available to rural areas as to large urban areas and of developing intensive health education programs among Negroes. The complexity of the problem and its association with numerous social factors is not minimized and no "fast working" solution is expected.

Because the authors do not believe that males are the weaker sex, they recommend intensified research into the causes of higher death rates among males than among females, particularly the high rate of suicides among rural males. Finally, they recommend periodic systematic mortality analyses of the population as a base for effective and efficient health planning.

Authors are Paul M. Houser and J. Allan Beegle. Head of the department sponsoring the survey is Charles P. Loomis.

NATIONAL HEALTH SURVEY STILL NEWS

Continued interest in the National Health Survey of 1935–1936 has made it necessary to reissue the basic descriptive reprint, "Scope and Method of the Nationwide Canvas of Sickness in Relation to its Social and Economic Setting." This, combined with abstracts of 180

reports and articles published between 1936 and 1950, comprises No. 5 of the Public Health Bibliography Series entitled *The National Health Survey, 1935–1936: Scope, Method and Bibliography* (Public Health Service Publication 85). Supt. of Documents, Washington 25, D. C., 30¢.

A HEALTH DEPARTMENT IN AN EMERGENCY

By way of getting the experience into the record, the Kansas City-Wyandotte (Kans.) County Health Department has prepared *Flood Disaster Activities*. This is the report of the Health Department and the Health Division of the Kansas City-Wyandotte Civil Defense. The health officer, Vernon M. Winkle, M.D., is chief of the Civil Defense Health Division.

This report has value as a guide to the handling of future disasters—flood or otherwise. Among its chief values are the 17 suggestions for a more effective and efficient program of service in time of emergency. There is a further value in this report of how a community of 130,000 met the flood emergency. It might be salutary for communities without full-time health services to analyze how the health problems of emergencies could be met. In fact, a report of how they were met in the many communities along the Missouri and Mississippi that are without full-time public health services would make interesting reading also.

THE CHURCH AND NARCOTIC ADDICTS

Narcotics discusses the relation of churches to the problem of narcotic addiction. Prepared by the Department of Pastoral Services and Social Welfare of the National Council of Churches of Christ, it emphasizes that narcotic addiction is a symptom of emotional insecurity. Hence, the primary function of the church is the planning of "long term programs to use their unique relationship to youth, the home, and the community . . . to meet the emotional hungers of youth." Broken homes, severe racial or cultural prejudices, poverty, poor housing—these are the factors that tend to produce feelings of inferiority, insecurity, and fear. Drug addiction is but one of the attempts, particularly of youth, to repair or conceal the injuries to self-esteem. Publications Department, National Council of Churches of Christ in the U. S. A., 297 Fourth Ave., New York, 15¢. Reduction on quantity orders.

WHAT'S GOING ON IN HEALTH RESEARCH

An Inventory of Social and Economic Research in Health was prepared by the staff of the Health Information Foundation, 420 Lexington Ave., New York 17. This useful volume consists of two parts: (1) an annotated bibliography of research projects, and (2) indexes of personnel, research organizations, and areas of investigation included in the inventory. Research is reported in the following areas: facilities, services, and personnel; industrial health and correlation of health levels with economic, sociological, and psychological variables. The bibliographies summarize the nature of the problem studied, the geographical area, the method of analysis, the project staff and organization, and the publications resulting from the research. The volume is of immediate use to those planning and conducting research in acquainting them with current work in the field. The more casual reader will be stimulated to look up some of the reports from a wide variety of subjects.

HEART DISEASE DATA IN GRAPHIC FORM

In order to answer the questions that people often ask about heart diseases, the American Heart Association, in cooperation with the National Heart Institute, has published *Diseases of the Heart and Blood Vessels: Facts and Figures*.

A dozen charts, in which red figures liberally illustrate varied statistical data about heart disease—kinds, age-death rates, seasonal incidence, among others. Presumably available from state or local heart associations or the American Heart Association, 1775 Broadway, New York 19.

WORTH ACQUIRING

Having A Baby by Ruth Carson is Public Affairs Pamphlet No. 178—and a pamphlet for modern mothers, doctors, and prenatal clinics. In a foreword, Hazel Corbin, director of the Maternity Center Association in New York, says: "There is a new ingredient in maternity care." The new ingredient is knowledge. "Fathers and mothers learn together what to expect from the first moment of pregnancy until they meet their baby face to face." Result—less fear, less tension, more happiness, more satisfaction. And that's what the pamphlet is all about and without any such nice "nellieisms" as "delicate condition." Public Affairs Committee, 22 E. 38th St., New York 16, 25¢. Reduction on quantity orders.

Opportunities for Federally Sponsored Social Science Research has been published as a public service to colleges and universities in the United States. It describes in specific terms the programs, fields of interest, and project areas covered by government agencies that sponsor social science research. It gives details also on how individuals and universities can secure federal sponsorship for research projects and discusses the significant problems faced after securing such sponsorship. The authors are Herbert H. Rosenberg and Erin Hubbert. Available free while the supply lasts from Syracuse University, Maxwell Graduate School of Citizenship and Public Affairs, Washington Research Office, 1785 Massachusetts Ave., N. W., Washington 6, D. C.

RECIPE FOR FOOD PROTECTION

Everybody Eats is an eight-page leaflet prepared by the National Sanitation Foundation, "designed for use by industrial and public health persons directly concerned with food service personnel training." In simple recipe style, it describes the role of sound sanitation practices in the protection of food. National Sanitation Foundation, Ann Arbor, Mich., 5¢, $4 per 100, $30 per 1,000.

Food Guide for Older Folks is a handy little pamphlet on "older people's food needs and how to meet them." It does not have actual recipes but gives suggested simple daily menus and all sorts of suggestions for using leftovers, adjusting to limited equipment, avoiding overweight, among others. Home and Garden Bulletin No. 17, Bureau of Human Nutrition and Home Economics. Office of Information, Department of Agriculture, Washington 25, D. C. Single copies free as long as the supply lasts.

Facts and Figures: About Mental Illness and Other Personality Disorders was published by the National Association for Mental Health as a part of its May 4–10 Mental Health Week activities. Based on a study made by the Association, it is in effect a fact sheet. It is designed as an aid to those who interpret to the public facts about mental health and mental illness. In releasing the pamphlet, the Association pointed out that the chances of partial or total recovery from schizophrenia—the most common of the serious mental diseases and "the psychosis of youth and early adult life"—have nearly doubled in the past 25 years. The chances were 30 per cent in 1928, 55 per cent in 1952. The president, Oren Root, repeated the Association's oft-said statement that "mental illness is one of the most widespread, costly and

neglected of the illnesses." 1790 Broadway, New York 19, 10¢; $7.50 per 100.

ANNUAL REPORTS

Annual Report, Montgomery County, Maryland, Health Department, tells the story of a 1952 model health department in operation. Well written and illustrated, it portrays the present-day priority of problems related to older as well as to younger people, and actual methods of solutions. V. L. Ellicott, M.D., is the health officer, 329 E. Montgomery Ave., Rockville.

One of the big guns in the war on cancer is public education. Just how big is shown in *American Cancer Society: 1951 Annual Report.* It tells how factory owners, women's clubs, neighborhood organizations, school authorities, professional societies, and many other groups help spread the word about cancer's "seven danger signals." More than a million women during 1951 saw the motion picture, *Breast Self Examination,* which was endorsed and showings arranged by 14 national women's organizations. "Public education is causing more people to seek medical attention early enough for real hope of cure to be realized."

Altogether the Society in 1951 spent more than $13 million on research, education (professional and public), service to patients, and supporting activities. The Society has 61 divisions covering every state, Puerto Rico and Alaska, and about 2,500 local units. 47 Beaver St., New York 4.

The *Annual Report* of the Division of Venereal Disease Control of Philadelphia deserves to be read by public health administrators and their staffs. This well written 12-page report with its pertinent and expressive illustrations outlines the status of the problem and the elements of a modern dynamic program. Here is documented evidence of how adapting the activities to specific aspects of the problem pays off. Department of Public Health, 503 City Hall Annex, Philadelphia 7.

Every Hour of the Day: A Report of Health Protection—1951 is the annual report of the Erie County Health Department which serves nearly a million persons. Spirally bound, its first section which gives the report its title, tells chiefly in pictures the many ways in which a family gets health protection through the Department. This section is also distributed separately as a short simple report to citizens.

The entire report has a wealth of detailed information illustrated with both drawings and tabular material.

Among the items in which the Department takes pride is the fact that only 10 towns or villages remain in the county with part-time health officers. In the four years of the County Health Department's existence, 22 local health districts have been abolished and their communities provided with the full complement of public health services of the Buffalo-Erie County Health Department. Berwyn F. Mattison, M.D., is the health commissioner.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Cost of Medical Care—*By Emily H. Huntington. Berkeley, Calif.: University of California Press,* 1951. 146 pp. Price, $2.50.

This is a remarkably detailed and careful analysis of the expenditures for medical care of 455 moderate-income, wage-earning families in the San Francisco East Bay area in 1947–48. The study, published under the auspices of the University of California's Heller Committee for Research in Social Economics, was designed to provide an objective approach to "the problem of the economic burden of medical care on a relatively well-to-do group of our wage-earning population." The 455 families were a sample of households in which the chief breadwinners were employed as milk wagon drivers, grocery clerks, or painters—representing groups of considerable size whose earnings were at about the middle of the income scale in California.

In this group of families, with a median family income of about $3,800, approximately 7½ per cent of the total was spent for medical care, including 1½ per cent for dental services. As in other such studies, however, a very uneven distribution of medical care expenditures was found; while a quarter of the families spent less than 2½ per cent of their incomes for medical care, another quarter spent 10 per cent or more, and a few considerably above 25 per cent. Also, the large families were found to have the largest medical expenses, so that the burden of medical costs was greatest in those families with the smallest incomes available to support each member.

Of the total expenditures, about one-third was spent for physicians' services, nearly 20 per cent each for dental care and drugs, 10 per cent for hospital care, and 8 per cent for prepayment premiums. The remainder, approximately 10 per cent, was spent for refractions and glasses, tests, x-rays and appliances, nursing, other practitioners, etc.

Membership in prepayment plans was considered to be probably more common among these families than in the general population. About 60 per cent of the families reported some type of prepayment coverage, but in less than 20 per cent were all persons in the family covered for the full year; and about two-thirds of those belonging to plans were protected only for hospitalized illness. More than 90 per cent of the illnesses receiving some prepaid care involved expenditures in addition to premiums; in the majority of cases the additional costs were less than $25, but medical bills of $100 or more in addition to premiums were incurred for about 15 per cent of the illnesses receiving prepaid care. The author concludes that "the prepayment plans represented in this study did not provide adequate security against the costs of medical care. Nonhospitalized as well as hospitalized illnesses may be very expensive, and coverage was most frequently limited to hospitalized illnesses. Furthermore, most of the plans provided at least in part for reimbursement rather than service benefits, and these fixed sums simply did not cover anything approaching all of the costs of most of the serious illnesses."

The monograph contains a great deal of valuable information. It deserves careful study by health workers and all

other persons interested in objective approaches to the analysis of medical care problems. MILTON TERRIS

The Geography of Hunger—*By Josué de Castro. Boston: Little Brown & Co.*, 1952. 337 pp. Price, $4.50.

The author, a Brazilian who is chairman of the Executive Council of the FAO (Food and Agriculture Organization of the United Nations), recognizes food supply as a social problem, created not primarily by over-population, but by inadequate food production due to a complex of ill-health, agricultural mono-culture, undesirable land tenure systems, colonial exploitation, ignorance, lack of scientific farming and varied religious and cultural factors. In this respect, he sides with the "positive" agricultural and public health schools of thought, and opposes the neo-Malthusian school which holds that soil has absolute limits of productivity, that cultivatable soil-areas are limited and are being rapidly degraded to a level of permanent worthlessness, and that the human race must reduce its numbers drastically to avoid disaster in the form of pestilence and war.

Basically a nutritionist, de Castro devotes most of his book to a global, nation-by-nation survey of starvation, semi-starvation and specific hunger (avitaminoses and mineral deficiencies) conditions. Although not a scientific agriculturist, he has acquired an extensive background on food production and recognizes the great potentialities for increased food supply by development of new lands, irrigation, reclamation and improved cultivation, fertilization, seed selection, insecticidal practices and transportation. While the book is not a public health treatise, de Castro recognizes not only the impacts of food deficiencies on health, but also the maleffects of lack of communicable disease control on food supply in underdeveloped areas.

Just as Cook, Vogt, *et al.*, are too pessimistic, de Castro is probably too optimistic. According to the author, reduction of birth rate is an automatic consequence of improved food supply and resultant social changes. Hence promotion of family planning is unnecessary. While the "public health" school recognizes a general correlation between rising living standards and lowering birth rates, it realizes that low rates of population increase do not invariably follow. He fails to appreciate Russell's position: "Slowly but definitely it becomes widely apparent that restraint of birth has equal importance with restraint of death and that the one is no more unnatural or illogical or impossible than the other."

This book will be of great interest to the nutritionist in public health, because of the wealth of geographical detail on specific hungers. Those concerned with other phases of public health in underdeveloped countries also will find it of real interest for its valuable background on basic food supply, disease and population problems.

Although the book has faults, the author deserves commendation for accomplishing such a difficult task as successfully as he has.

JOHN M. HENDERSON

Infective Hepatitis. Studies in East Anglia during the Period 1943–47—*By F. O. MacCallum, A. M. McFarlan, J. A. R. Miles, M. R. Pollock and C. Wilson. Medical Research Council Special Report Series, No. 273. London: His Majesty's Stationery Office*, 1951. 144 pp. Price, 4s 6d.

This monograph serves as a record of a particular series of detailed investigations conducted at the Jaundice Laboratories in the Department of Pathology, University of Cambridge. Epidemiologic studies based on compulsory notification within a population of 2,600,000 showed a falling incidence of the disease,

although seasonal rises in autumn were characteristic. Valuable are the epidemic, endemic and clinical observations made in towns and villages which covered over 2,000 cases. Biochemical tests clearly indicated that liver damage and symptoms were maximal early in the disease, although they did not appear to be causally related. Hematologic and serologic investigations and transmission experiments—all carefully detailed—amply confirmed the well known fact that infective hepatitis is probably due to a virus called A, which is present in the feces before and after onset of symptoms. The agent that causes homologous serum hepatitis has not been found in feces. All of the tests reported had to be conducted on human volunteers because the virus cannot be transmitted to animals. The student of infective hepatitis will find valuable information in this readable and well documented treatise. K. F. MEYER

An Introduction to Acarology—*By Edward W. Baker and G. W. Wharton. New York: The Macmillan Company,* 1952. 465 pp., 377 text-figures and 1 color plate. Price, $10.00.

As stated in the preface to this book, it has been written for students and professional workers interested in Acarina. The first 35 pages are given to an introduction dealing with methods of collecting and preserving, external features, internal anatomy, development and diagnostic classification of the Order into five Suborders. The bulk of the book is arranged systematically and gives excellent keys to families within each Suborder and a concise diagnosis of each family. Neither diagnoses, nor keys are given for genera. They are merely listed and in the majority of cases only type species are mentioned. This limitation is due to the great number of species in existence, whose mere listing would increase the size of the book considerably and add to its price, which seems to be already too high to appeal to the pocketbook of an average student. The color plate could have been omitted without impairing the quality of the book in the least, because an animal which is of a uniform color may be just as well shown in black and white. Written by two well known specialists, the text is authoritative and reliable. The remarkably good text-figures and the numerous bibliographic references will be appreciated by specialists. Brief information concerning parasitic Acarina of economic or medical importance, given for each family in its allotted place, will prove to be of help to students in these fields. The reviewer would like to suggest that, in the event of a second edition, the value of this book could be considerably increased by the inclusion of a separate chapter on parasitic Acarina and keys to all genera.

ALEXANDER PETRUNKEVITCH

The Child and His Play: A Planning Guide for Parents and Teachers.—*By Hazel Kepler. New York: Funk & Wagnalls,* 1952. 309 pp. Price, $3.75.

A newspaper woman who publishes a column in a Durham (N. C.) paper has gathered together hundreds of helpful suggestions to be used by adults for keeping youngsters of various ages happily busy.

Among the 28 chapters the following titles will suggest the coverage: How to Choose a Toy; The Magic of Good Books; Art for Art's Sake; Dramatic Play; Rhythm Activities; Indoor Games; Outdoor Games; A Pet is a Wonderful Thing; etc.

The chapters contain practical pointers on the interests of youngsters of different ages; lists of materials needed for various activities and explicit directions for using them; and suggestions for wise approach to children. All is told in an easily readable style.

The foreword by Professor Howard

E. Jensen of the Department of Sociology and Anthropology of Duke University ends; ". . . to face idleness without boredom and solitude without loneliness requires an inner richness of personality and character which only he can achieve whose parents were wise or to whom Fate was kind.

"This book can do nothing about Fate. But it can add much to the wisdom of parents." FLORENCE A. BROWNE

Preventive Medicine and Public Health—*By Wilson G. Smillie. (2nd ed.) New York: The Macmillan Co.*, 1952. 603 pp. 43 illus. Price, $7.50.

The first revision, continuing the approach and pattern of this well known text published originally in 1946, is intended solely as an introduction to the field of preventive medicine. The task of selecting the material to be included from the mass of subjects taught traditionally by departments of preventive medicine and public health is not easy because the field is not well defined. The author has held to the need to distinguish between preventive medicine as a function of the individual and public health as the responsibility of the community in making his choice. Many changes have been made in the new edition, carrying forward this concept and taking into account developments which have occurred during the past five years. Environmental factors have been given even less emphasis because it is believed that the principal problems of sanitation have been solved. Communicable diseases are discussed at length, but it is recognized that they will play a somewhat minor role in future health programs. These predictions would hold probably for peace time conditions, but there are many in the armed forces and defense agencies who will clamor for expansion rather than reduction of teaching in these two areas.

In view of the aging of our population, the decision to emphasize the promotion of the health and prolongation of life of the adult seems very wise. The chapters dealing with geriatric problems also include consideration of rehabilitation, development of medical care programs, a very rational discussion of voluntary prepayment insurance and the evolution of social security legislation.

The arrangement of the book is not altered materially; the fifty chapters are divided into six sections dealing with Population Trends and Vital Statistics, Environmental Sanitation, Communicable Disease Control, Child Hygiene, Adult Health and Public Health Administration. New Chapters have been added covering Accidents and Conservation of Vision. Only a small number of collaborators participated in the preparation of the revision, so that it represents essentially the theories and philosophies of the author. The text is well indexed and the use of a larger page size and type has resulted in a pleasing format. From all aspects, this book should find popularity and wide use in undergraduate medical teaching.

JOHN J. PHAIR

The Pathogenesis of Tuberculosis—*By Arnold R. Rich. Springfield, Ill.: Thomas*, 1951. 1,028 pp. Price, $15.00.

The first edition of Dr. Rich's encyclopedic work was published in 1944, and reviewed in the January, 1945, issue of this *Journal* by Dr. John H. Korns, who high lighted the comprehensive survey of complicated factors that enter into the pathogenesis of tuberculosis.

In the second edition, Dr. Rich has retained practically all of the original text and illustrations, adding 83 additional references to the bibliography, one chart, and 14 pages to the text. Included in the new material are such recent developments as Mudd's study of the granules in TB bacilli by electron microscope, the identification of histoplasmosis and pulmonary calcifications, Raffel's study of certain fractions of the tubercle

bacillus and his demonstration of the independence of allergy and immunity, the effect of the adrenocortical hormone on the tuberculin test, Dock's theory of the relationship between the upright position and the localization of TB in the lung apices, and the work of Dubos and others on new liquid media, the tendency of virulent TB bacilli to grow in cord-like formation, and the effect of protein deficient diets upon the resistance of experimental animals to tuberculosis.

Dr. Rich preserves admirable balance in the presentation of such controversial material as BCG, inheritance factors, tissue immunity, the significance of hypersensitivity, and the protection afforded by a healed primary lesion.

While the reviewer agrees with Dr. Korns that this work remains the most complete review in English "of fact and theory on why tuberculosis behaves as it does," it is suggested that the value of the second edition to readers in the public health field would have been enhanced if (1) the charts and tables had been brought up to date, (2) the epidemiologic implications of the PHS community-wide surveys had been discussed, and (3) more space had been devoted to bacterial resistance to streptomycin and other anti-tuberculosis drugs, and to the effect of adrenocortical hormone upon the resistance of experimental animals (and man) to tuberculosis.

EDWARD KUPKA

Nutrition and Climatic Stress with Particular Reference to Man—*By H. H. Mitchell and Marjorie Edman. Springfield, Ill.: Thomas,* 1952. 244 pp. Price, $6.75.

This timely publication will serve as a basis for decisions which may be made in the not too distant future as to the dietary regimes which will most effectively assist the human being to withstand the potentially damaging physiological effects of severe climatic stresses.

In considering the climatic or environmental stresses the authors have divided these stresses into "Cold Environment," "Hot Environment," and "Altitude." Under the latter, "acceleration" as a stress is acknowledged and touched upon; and, although acceleration as such has not been considered as a factor in climatic stress, the information is important as it relates to the problems of flight.

This volume with every statement documented and clearly and comprehensibly expressed has presented in 174 pages a thorough and critical review and interpretation of the presently existing data in the field of physiological response by the animal to stress. The bibliography, in itself covering 59 pages and including both American and foreign references, is a treasure chest for anyone interested in the problem of combating the effects of environmental or climatic stress on the human being.

To anyone concerned with feeding programs or planning programs under conditions imposed by military operations on the ground or in the realm of flight, this book will provide basic data and as such makes a great contribution in the field of normal nutrition and preventive medicine. JANE C. EBBS

Rehabilitation Nursing—*By Alice B. Morrissey. New York: Putnam's,* 1951. 285 pp. Price, $5.00.

This is an interesting, easily read book. It will be of greatest interest to the student and to nurses interested in the field of orthopedic nursing. Miss Morrissey has chosen a comprehensive title but she makes her contribution almost entirely in the specialized field of nursing and the orthopedically handicapped.

The book contains specific directions for certain technics and procedures which will be very helpful to those working with handicapped persons. The descriptions of useful apparatus, its care

and maintenance are good. Excellent suggestions for developing and adapting equipment for individuals are given and should be most helpful to both new and experienced workers.

In several sections the author discusses the psychological aspects in rehabilitating the patient. She points out specific problems and the need for the nurse's participation in dealing with these problems. However, in comparison with the definite directions on the patient's physical care offered in this book, the suggestions for dealing with the psychological problems are not too specific.

Miss Morrissey includes an imposing list of references which will be valuable to her readers. There is no doubt that this book, within its limitations, will be useful in teaching nurses and others interested in this phase of nursing.

HELEN HARTIGAN

Your Health and Safety—*By Jessie Williams Clemensen and William Ralph La Porte (3rd ed.). New York: Harcourt Brace,* 1952. 509 pp. Price, $3.32.

For the health officer who dreams of a utopian community in which all persons will reach adulthood in a "positive state of physical, mental, and social well-being," well informed in matters of personal hygiene, accident prevention, and early detection of disease, completely sympathetic with the need for public health approaches to chronic degenerative as well as to infectious diseases, and fully cognizant of such socioeconomic problems as the distribution of medical care and the desirability of health insurance, *Your Health and Safety* will indeed be a bright spot upon his horizon.

The third edition of this high school textbook has been considerably revised and thoroughly meets the authors' objective of providing "the latest information and tested teaching devices for an adequate high school course." Each subject is covered in good detail, which accounts for the book's running somewhat more than 500 pages in double column format. The writing style is clear, interesting, and stimulating, and the material is well illustrated with pictures and drawings. The latter are utilized mostly to depict gross and microscopic anatomy and are done in two colors to indicate function more clearly.

The book is divided into eight units covering the several subjects indicated above. Each unit follows a definite teaching pattern, beginning with a health inventory in which the student takes stock of his own health practices. There follows a general discussion of the problems, including the scientific facts of physiology on which these practices are based. Each chapter of the unit ends with a list of suggested activities which the student can pursue in making practical application of the things he has just learned. At the end of each unit he is asked to re-rate himself on the health inventory to determine whether he has succeeded in altering any poor habits he may have discovered earlier.

If a text of this scope can be widely utilized by the current classes of high school students, the health officer may not have to wait too long before he finds his community more receptive to his plans for more effective programs in accident prevention, chronic disease control, and distribution of medical care. It should not be difficult to stimulate the parents to read through the chapters and discuss the subject matter with the students. At least this reviewer did that with his teen-age daughter and found the process quite enlightening for both.

I. JAY BRIGHTMAN

Handbook of Cardiology for Nurses—*By Walter Modell. New York: Springer Publishing Company,* 1952. 246 pp. Price, $3.50.

This is a fairly satisfactory reference book on heart disease with helpful in-

formation regarding the nurse's part in caring for cardiac conditions—if you can find it. With the exception of chapter 21, nine pages, which is devoted to General Nursing Care, one must search for nursing functions in a wealth of clinical material. The approach is that of a physician, and in spite of a half-page foreword by a nurse, one misses the nursing touch and those details of nursing care which a nurse must practise to make her skills effective with this group of patients. Nursing does not receive separate treatment, not even in the chapter on rheumatic fever. There are no actual patient situations presented and the public health nurse will search in vain for the practical solutions of typical home situations.

This reviewer deplores any textbook for nurses which does not place nursing first throughout the discussion of treatment, and that is not written in complete collaboration with an experienced nurse. This book has much to offer nurses and forms a useful reference, especially the information in the Appendix on low-sodium diet, but the author has missed a wonderful chance to present actual nursing situations in true nursing handbook style and to give practical suggestions for the continuing home care of this very large group of patients—young and old.

DOROTHY DEMING

Military Medical Manual—*(7th ed.). Harrisburg, Pa.: The Military Service Publishing Company*, 1952. 761 pp. Price, $5.75.

Any Medical Department officer who was in World War II needs very little introduction to the *Military Medical Manual*. This, the 7th edition, in general format and scope of coverage, is similar to the earlier editions, particularly those published in 1942 and 1945. The content of the volume has been completely revised and much of it rewritten, so that the aim of the publisher "to make the Manual virtually a one-volume professional library for the Army Medical Services officer" is achieved to a remarkable degree.

Those who have not used the volume in the past will find it a valuable compendium of Army procedure, organization, tactics and regulations, particularly as they apply to the Army Medical Services officer. The formal Army regulation type of discussion is avoided, so that the material is much more readable than AR's or the usual memos or bulletins. A generous portion of the volume is given to a discussion of the tactical operation of various parts of the Army. Specific discussion is given to medical tactics and administration. A new chapter, on medical aspects of atomic, biological and chemical warfare, has been added. Even the recently adopted back pressure—arm lift method of artificial respiration is included.

For those who are in the Army Reserve, the volume brings up to date Army regulations and procedures, at least to about the first of 1952. It is to be regretted that the volume does not carry more extensive references to pertinent Army regulations, special regulations, etc., for the benefit of those who desire to go to the official statement.

Anyone who is in the Army Medical Services, the Reserves particularly, or who is waiting for those momentous "greetings," anticipating service in the Army Medical Services, will find the volume well worth the price.

FRANCIS B. ELDER

Use of Health Resources by Rural People in Two Central New York Counties, 1949—*By Olaf F. Larson and Donald G. Hay. Ithaca, New York: New York State College of Agriculture*, 1951. 45 pp.

The authors, who represent the Department of Rural Sociology at Cornell University and the Bureau of Agricultural Economics at the U. S. Department of Agriculture, point out that an under-

standing of the use now made of medical and health care resources by country and village people is basic to continued improvements in rural health care.

Two central New York counties, mostly rural, were chosen and the experience of about 1,000 persons was sampled in each. Cortland County has a full-time county health department and Oswego County does not. The authors believe that both counties are characterized by a comparatively high rate of use of health care personnel and facilities. Out of every 10 rural households in each county during a 12-month period, about 9 use a physician, 6 a dentist, 4 some type of public health service for individuals, 3 used school health services, less than 3 used a hospital, and less than 1 used other health care personnel, including osteopath or chiropractor. The report sampled the extent to which residents of these counties were aware of public facilities and the extent to which these are used. It is evident that the full-time county health department has made considerable impress upon the people of Cortland County.

It is gratifying to see the backing for high-grade health services coming now to an increasing degree from agricultural sources. REGINALD M. ATWATER

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADRENAL CORTEX. TRANSACTIONS OF THE THIRD CONFERENCE NOVEMBER 15–16, 1951. Edited by Elaine P. Ralli. New York: Josiah Macy, Jr. Foundation, 1952. 204 pp. Price, $3.25.

BACTERIOLOGICAL STUDY OF AUTOMATIC CLOTHES WASHING. G. M. Ridenour. Ann Arbor, Mich.: National Sanitation Foundation, University of Michigan, 1952. 116 pp.

BIOCHEMICAL STUDIES OF BACTERIAL VIRUSES. E. A. Evans, Jr. Chicago, Ill.: University of Chicago Press, 1952. 68 pp. Price, $2.75.

BLAKISTON'S ILLUSTRATED POCKET MEDICAL DICTIONARY. New York: Blakiston, 1952. 1,032 pp. Price, $3.25 plain; $3.75 thumb-indexed.

EPIDEMIOLOGICAL AND VITAL STATISTICS, ANNUAL. 1939–1946. PART II—CASES OF AND DEATHS FROM NOTIFIABLE DISEASES. World Health Organization. New York: Columbia University Press, 1952. 326 pp. Price, $4.00.

ESSENTIALS OF PUBLIC HEALTH. William P. Shepard (2nd ed.) Philadelphia: Lippincott, 1952. 581 pp. Price, $6.50.

FAMILY PROBLEMS HANDBOOK. Arnold W. Holmes. New York: Frederick Fell, 1952. 191 pp. Price, $3.50.

FUNDAMENTALS OF TRACK AND FIELD COACHING. Richard I. Miller. New York: McGraw-Hill, 1952. 271 pp. Price, $4.75.

GROUND EQUIPMENT AND INSECTICIDES FOR MOSQUITO CONTROL. American Mosquito Control Association. Bulletin No. 2. Yaphank, N. Y.: C. T. Williamson, 1952. 98 pp. Price, $2.00.

GUIDANCE IN A RURAL COMMUNITY: GREEN SEA, A SOUTH CAROLINA SCHOOL DISTRICT PLANS WITH AND FOR ITS BOYS AND GIRLS. Amber Arthun Warburton. Washington, D. C.: Alliance for Guidance of Rural Youth, 1952. 156 pp. Price, $2.00.

HISTORY OF AMERICAN EPIDEMIOLOGY, THE. C.-E. A. Winslow, Wilson G. Smillie, *et al.* St. Louis: Mosby, 1952. 190 pp. Price, $4.75.

HOW DOES YOUR CITY RATE? COMPARISON OF THE 57 LARGEST METROPOLITAN AREAS IN 41 POPULATION AND HOUSING CHARACTERISTICS. Edward B. Olds. St. Louis: Social Planning Council of St. Louis and St. Louis Planning, 1952. 112 pp. Price, $2.00.

INCREASING PERSONAL EFFICIENCY. Donald A. Laird (4th ed.) New York: Harper & Bros., 1952. 294 pp. Price, $3.50.

INTERNATIONAL SANITARY REGULATIONS. PROCEEDINGS OF THE SPECIAL COMMITTEE AND OF THE FOURTH WORLD HEALTH ASSEMBLY ON WHO REGULATIONS NO. 2. New York:

Columbia University Press, 1952. 443 pp. Price, $2.25.

INVENTORY OF SOCIAL AND ECONOMIC RESEARCH IN HEALTH 1952. New York: Health Information Foundation, 1952. 197 pp. Price, $1.50.

LIVING AGENTS OF DISEASE. James T. Culbertson and M. Cardelia Cowan. New York: Putnam's Sons, 1952. 624 pp. Price, $5.50.

MANUAL OF CORPORATE GIVING. Edited by Beardsley Ruml in collaboration with Theodore Geiger. Washington, D. C.: National Planning Association. 414 pp. Price, $6.75.

MANUAL OF ELECTRO CARDIOGRAPHY. Benjamin F. Smith. Houston, Tex.: Elsevier Press, 1952. 215 pp. Price, $4.50.

MEASURING YOUR PUBLIC RELATIONS. Herman D. Stein. New York: National Publicity Council, 1952. 48 pp. Price, $1.25.

MEMBERSHIP DIRECTORY OF THE AMERICAN PUBLIC HEALTH ASSOCIATION 1952. Raleigh, N. C.: Health Publications Institute, Inc., 1952. 347 pp. Price, $6.00 paper, $7.50 cloth.

MODERN PHILANTHROPY AND HUMAN WELFARE. A ROUND TABLE. New York: Grant Foundation, 1952. 39 pp. Free.

MUNICIPAL YEAR BOOK. Clarence E. Ridley and Orin F. Nolting, editors. Chicago: International City Managers' Association, 1952. 604 pp. Price, $10.00.

ORIGIN OF LIFE AND THE EVOLUTION OF LIVING THINGS. An Environmental Theory. Olan R. Hyndman. New York: Philosophical Library, 1952. 648 pp. Price, $8.75.

PARASITES OF DOMESTIC ANIMALS, THE. Thomas W. M. Cameron. Philadelphia: Lippincott, 1952. 420 pp. Price, $7.00.

PESTICIDE HANDBOOK. Compiled and edited by Donald E. H. Frear (4th ed.) State College, Pa.: College Science Publishers, 1952. 176 pp. Price, $1.25.

POPULATION BULLETIN. No. 1—December 1951. United Nations. New York: Columbia University Press, 1951. 57 pp. Price, $.60.

PROBLEMS OF FETAL AND NEONATAL MORTALITY. New York Academy of Medicine and the Medical Society of the County of New York. Albany, N. Y.: State Department of Health, 1952. 61 pp.

PUBLIC HEALTH AND DENTAL CARE. A GUIDE TO DEVELOPMENTS IN THE UNITED STATES. Alfred J. Asgis (2nd ed. rev.) New York: New York University, College of Dentistry, 1952. 80 pp.

PSYCHIATRY AND MEDICAL EDUCATION. 1951 CONFERENCE. Edited by John C. Whitehorn. Washington: American Psychiatric Association, 1952. 164 pp. Price, $1.00.

RENAL FUNCTION. TRANSACTIONS OF THE THIRD CONFERENCE OCTOBER 18–19, 1951. Edited by Stanley E. Bardley. New York: Josiah Macy, Jr. Foundation, 1952. 210 pp. Price, $3.50.

STUDY OF MEDICAL CARE SERVICES IN THE DEPARTMENT OF WELFARE OF THE CITY OF NEW YORK. Prepared by staff assembled by American Public Health Association, Inc. for Mayor's Committee on Management Survey, 1952. 90 pp. Copies limited.

SYMPOSIUM ON RADIOBIOLOGY. THE BASIC ASPECTS OF RADIATION EFFECTS ON LIVING SYSTEMS. Edited by James J. Nickson. New York: John Wiley, 1952. 465 pp. Price, $7.50.

TOXOPLASMOSIS. Jacob Karl Frenkel and Saul Friedlander. Washington, D. C.: Govt. Ptg. Office, 1951. 105 pp. 28 illus. Price, $.50.

TRANSACTIONS OF THE CONFERENCE ON MORALE —AND THE PREVENTION AND CONTROL OF PANIC. Held under the joint auspices of the New York Academy of Medicine and the Josiah Macy, Jr. Foundation, 1952. New York, N. Y.: Academy of Medicine, 1952. 75 pp.

'TWIXT THE CUP AND THE LIP. A Study of American Food Habits. Margaret Cussler and Mary L. De Give. New York: Twayne Publishers, 1952. 262 pp. Price, $3.95.

UNFINISHED BUSINESS OF CIVIL SERVICE REFORM, THE. William Seal Carpenter. Princeton, N. J.: Princeton University Press, 1952. 128 pp. Price, $3.00.

URBAN WORKING-CLASS HOUSEHOLD DIET 1940 TO 1949. First Report of the National Food Survey Committee. London: His Majesty's Stationery Office, 1951. 3s 6d Net.

WHO ARE THE GUILTY? A STUDY OF EDUCATION AND CRIME. David Abrahamsen. New York: Rinehart & Co., 1952. 340 pp. Price, $5.00.

ASSOCIATION NEWS

EIGHTIETH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
CLEVELAND, OHIO, OCTOBER 20–24, 1952

DR. MULLER JOINS APHA STAFF

Dr. Hugh R. Leavell, chairman of the APHA Executive Board, and Professor Ira V. Hiscock, chairman of the Committee on Administrative Practice, announce the appointment of Dr. Jonas N. Muller as staff director of the Subcommittee on Medical Care. Dr. Muller joined the staff on July 1, 1952. The new headquarters of the Subcommittee on Medical Care will be in the quarters of the Department of Public Health, School of Medicine, Yale University, where Dr. Muller has been recently appointed associate professor of public health. The offices of the Subcommittee on Medical Care are now located at 321 Congress Ave., Room 23, New Haven 11, Conn.

Jonas N. Muller, M.D.

Dr. Muller received his undergraduate degree from Harvard University and his medical degree at the College of Physicians and Surgeons, Columbia University. After completion of his medical internship and residency and a period of industrial medical practice, he joined the staff of the Department of Public Health, State of California. He received his M.P.H. from the University of Michigan in 1948 and then served as administrative assistant and assistant health officer of the Department of Public Health, City of Oakland, Calif. Most recently he has been working in rehabilitation on the staff of the Kabat-Kaiser Institute for Neuromuscular Rehabilitation in Vallejo, Calif. Dr. Muller succeeds Dr. Milton Terris, presently assistant dean in charge of postgraduate education at the School of Medicine, University of Buffalo.

Mr. Nathan Kramer will remain as administrative assistant on the staff of the Subcommittee on Medical Care. Dr. Dean Clark is currently chairman of the Subcommittee. The staff will continue studies of operating and proposed medical care programs, with particular interest in administrative organization and its effect on the quality, types, and amount of service rendered.

MEMBERS HAVE IDEAS

In reply to the brief questionnaire accompanying the June 23rd APHA *News Letter*, members are becoming vocal about the policies and future of the Association. Although as of July 3 returns had been received from only a

small number of members, there are already enough to indicate that there will be a wealth of ideas for Section Councils and the Executive Board to consider.

The members have ideas about the *Journal*, about the types of membership, voting privileges, relationship to the lay public, to governmental agencies and to other health agencies, about annual meeting programs, about affiliated societies, and a host of other matters.

Who have been the most vocal members up to the present time? Not members of the Health Education Section, as one might expect. The two Sections with the largest per cent of returns up to date are Food and Nutrition and Industrial Hygiene, which rank 8th and 11th among the 13 Sections in number of members.

Returns will be analyzed for the use of the Sections and the Governing Council at the Annual Meeting in Cleveland in October. The more returns received the more significant will be the data upon which future planning can be done.

This is the opportunity of all members to influence the next decade of the Association's history.

HYGIENE OF HOUSING COMMITTEE MEETS

A meeting of the Subcommittee on Hygiene of Housing was held in New York on June 23 and 24, under the chairmanship of Professor C.-E. A. Winslow, with Allen M. Pond as vice-chairman. The principal business of the meeting was to consider a report on "Housing for the Aging Population," which reviews the physiological, mental and emotional needs of the elderly, and the housing conditions essential for meeting those needs, with recommendations as to the methods by which this problem can best be solved in the United States. A special Drafting Committee was appointed, under the chairmanship of Martin Cherkasky, M.D., to revise the report, which it is hoped may be published in the fall or winter. Two new projects were launched by the Committee: a special Subcommittee on Appraisal of the Social Reactions of Tenants to Various Types of Housing was created under the chairmanship of Professor F. Stuart Chapin of the University of Minnesota, and another special subcommittee under the chairmanship of Mr. Pond was created to make a preliminary study of the Problems of Housing in Tropical and Subtropical Areas.

DENVER MEETING, WESTERN BRANCH, APHA

The 19th Annual Meeting of the Western Branch of the American Public Health Association was held in Denver, Colo., June 3–6, under the presidency of L. J. Peterson, M.S.P.H., administrative director of the Idaho State Department of Health. The sessions were well attended.

The first day consisted of section meetings on venereal disease, sanitation, health education, laboratory, industrial hygiene, and records and statistics.

The program for the following three days consisted of general sessions built around panel discussions on the following subjects:

What Services Come First?
Stimulating Community Action
Additions and Subtractions
Beckoning Vistas, the Program of the Future

Wilton L. Halverson, M.D., immediate past president of the Western Branch, president-elect of APHA, and California State Health Officer, presented the keynote speech. The John J. Sippy Memorial Address on "Trends in Public Health" was given by Florence R. Sabin, M.D., of Denver. Excellent exhibits, both technical and scientific, were directed by Norma Johannis, health educator of the Colorado State Department of Health.

Harold M. Erickson, M.D., state health officer of Oregon, was chairman of the Resolutions Committee. Among the resolutions adopted was one urging the transfer of the Indian Service medical programs to the U. S. Public Health Service, in line with resolutions previously adopted by the American Public Health Association and by the State and Territorial Health Officers Association. Another resolution pointed up the rising per capita costs of local health services and deprecated the use of figures below the actual needs, which might mislead communities thinking of developing this type of service. Another recognized the long and effective service of Louis Olsen, the retiring health officer of Palo Alto, Calif.

The Regional Board of the Western Branch, on petition of more than 40 persons, created a new Epidemiology Section. The Platt Covington Scroll, given each year by the Western Branch in recognition of membership growth, went this year to the Hawaii Territorial Department of Health, represented by Charles L. Wilbar, Jr., M.D.

The 1952–1953 officers are:

President—L. S. Goerke, M.D., director, Bureau of Medical Services, City Health Department, Los Angeles, Calif.

President-Elect—Curtiss M. Everts, Jr., director and chief sanitary engineer, Division of Environmental Sanitation, State Board of Health, Portland, Ore.

Vice-President—Leland E. Powers, M.D., professor and executive officer, Department of Public Health and Preventive Medicine, University of Washington School of Medicine, Seattle, Wash.

Vice-President—G. D. Carlyle Thompson, M.D., executive officer, State Board of Health, Helena, Mont.

Vice-President—Ellarene L. MacCoy, M.D., state medical director, Bureau of Vocational Rehabilitation, State Department of Education, Los Angeles, Calif.

Secretary-Treasurer—Mrs. L. Amy Darter, supervising bacteriologist, Division of Laboratories, State Department of Public Health, Berkeley, Calif.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Franklin L. Bowling, M.D., M.S., Route 3, Colorado Springs, Colo., Preventive Medicine Officer, Inspector General's Office, U. S. Air Force

John M. Brown, M.B., D.P.H., Sturgeon Health Unit, Qu'Appelle Block, Edmonton, Alta., Canada, Medical Director

Girard J. Craft, M.D., 454 Warren St., Hudson, N. Y., Deputy Commissioner of Health, Columbia Co. Dept. of Health

Kamakhya P. Mitra, M.B., D.P.H., Ludlow Jute Co., Ltd., 7 Royal Exchange Pl., Calcutta, India, Senior Medical Officer of Health

Max Silverman, M.D., 13615 Michigan, Dearborn, Mich., Acting Health Director, Dearborn Health Dept.

James R. Thomas, M.D., M.P.H., Health Dept., Griffin, Ga., Health Commissioner, Griffin-Spalding County Health Dept.

J. Greenwood Wilson, M.D., City Hall, Cardiff, Wales, Great Britain, Medical Officer of Health

Laboratory Section

Lenora Bebout, 5405 Coral St., Pittsburgh 6, Pa., Laboratory Technician, West Penn Hospital

Helen P. Lynch, 2222 Clermont, Denver, Colo., Medical Technician-Bacteriologist, Fitzsimons Army Hospital

Mary J. Nix, 4931 N. E. Glisan, Portland 13, Ore., Technologist-in-Charge, Providence Hospital

Statistics Section

Marvin N. Glasser, M.P.H., New York State Dept. of Health, Albany, N. Y., Biostatistician

Jacques Vilgrain, Ruelle Alerte 140, Port-au-Prince, Haiti, Supervisor of Statistics, Haitian Institute of Statistics

Engineering Section

Harry W. Coppock, 4130 S. E. 132nd Ave., Portland 66, Ore., Sanitarian, Oregon State Board of Health

Walter L. Harris, M.S., Clearwater County Health Unit, Orofino, Ida., Sanitarian

Gerard C. Jospitre, M.P.H., c/o Dr. Joseph Buteau, Rue Pavee, Port-au-Prince, Haiti, Public Health Engineer, American Sanitary Mission

P. H. McGauhey, M.S., Richmond Field Station, Univ. of California, 1301 S. 46th St., Richmond, Calif., Asst. Director, Sanitary Engineering Research Project

Donald J. Nelson, Jr., Environmental Health Center, USPHS, 1014 Broadway, Cincinnati 2, Ohio, Asst. Sanitary Engineer

Kenneth L. Pool, P.O. Box 637, Lewiston, Ida., Sanitarian, Idaho State Dept. of Public Health

Ted Reister, Skagit County Health Dept., Mount Vernon, Wash., Sanitarian

Thomas B. Sexton, Jr., 2346 Bancroft Way, Berkeley 4, Calif., Student, Univ. of California, School of Public Health

Edward R. Spruill, P.O. Box 195, Wilkesboro, N. C., Sanitarian, Wilkes County Health Dept.

Industrial Hygiene Section

Veronica Donnelly, R.N., Box 1186, Syracuse, N. Y., Consultant Public Health Nurse, Division of Industrial Hygiene and Safety Standards, State Dept. of Labor

Gordon M. Hemmett, M.D., C.M., 1156 Clover St., Rochester 10, N. Y., Medical Director, Hawk-Eye Works, Eastman Kodak Co.

Jermyn F. McCahan, M.D., American Medical Assn., 535 N. Dearborn St., Chicago 10, Ill., Asst. Secretary, Council on Industrial Health

Holden B. McClung, 3006 Oakcrest Ave., Baltimore 14, Md., Chief, Survey Division, Army Environmental Health Laboratory

Food and Nutrition Section

Pearl S. Camstra, M.S., 244 East Pearson St., Chicago, Ill., Chief, Nutrition Section, Chicago Health Dept.

Travis D. Love, Jr., U. S. Food and Drug Administration, 1222 P.O. Bldg., Chicago, Ill., Bacteriologist, Chicago Field Laboratory, Division of Microbiology

Maternal and Child Health Section

Genevieve Artz, M.S.S., 1704 Rosewood, Louisville, Ky., Lecturer in Social Work, Division of Community Health, Univ. of Louisville Medical School

William C. Geer, M.A., 1909 Hayes St., Nashville, Tenn., Asst. Service Director, Speech and Hearing, Crippled Children's Service

Ethel Hammond, M.A., 2219 Stuart St., Berkeley 5, Calif., Instructor, School of Nursing, Univ. of California

Ruth S. Kempe, M.D., 65 Fairway Drive, Daly City, Calif., Acting Chief, Division of Mental Hygiene, San Francisco Health Dept.

Luisa Pfau, M.D., Hernan Cortes 2419, Santiago, Chile, S. A., Chief, Maternal and Child Dept., Direccion General de Proteccion a la Infancia y Adolescencia

Public Health Education Section

Arthur J. Kavanagh, Jr., M.S.P.H., 2 North Road, Chelmsford, Mass., Health Officer, Chelmsford Health Dept.

Henrietta S. Kice, 95 Brook St., Garden City, N. Y., Representative of Woman's Auxiliary, American Medical Assn. to National Advisory Committee on Local Health Units

Walter R. Lalor, M.P.H., Buffalo, Ill., Field Consultant, Illinois Heart Assn.

Lucille P. Leonard, 341 Sharon St., Providence 8, R. I., President, National Congress of Parents & Teachers

Irving Mushlin, M.A., Apt. 3-B The Village, Elizabeth 3, N. J., Training Administrator, National Tuberculosis Assn.

Clarence E. Pearson, 5311 N. Ravenswood Ave., Chicago 40, Ill., Student, School of Public Health, Univ. of North Carolina

Miss L. L. Schwarcz, M.S.P.H.E., 55 Park Ave., New York, N. Y., Unemployed

Irma Sundling, M.Ed., 600 Lexington Ave., New York 22, N. Y., Health Education Secretary, National Board, Y.W.C.A.

Eugene H. Wiard, 706 N. Washington Ave., Lansing 6, Mich., Exec. Secy., Michigan Health Council

Public Health Nursing Section

Betty J. Adams, M.A., Univ. of California at Los Angeles, 405 Hilgard Ave., Los Angeles, Calif., Asst. Prof. of Medical Nursing, School of Nursing

Marian R. Chladek, M.A., State Dept. of Health, State Office Bldg., Cheyenne, Wyo., Director, Public Health Nursing Division

Mary E. DuBois, R.N., 350 West 12 St., New York 14, N. Y., Student, New York Univ.

Thelma S. Ellis, 70 N. Water St., Rochester, N. Y., Asst. Secy., Council of Social Agencies

Lydia A. Hopfinger, M.P.H., W-6 Room 206, Richland, Wash., Public Health Nurse Supervisor, Dept. of Health and Welfare

Louisa Popham, M.N., 2523 Octavia St., New Orleans, La., Hospital Nursing Consultant in Maternal and Child Health, State Dept. of Health

Vera M. Rose, R.N., M.A., 40 Fenton Place, Lynbrook, N. Y., Director, District Nursing Assn.

Epidemiology Section

Winslow J. Bashe, Jr., M.D., 61 N. Arlington Ave., East Orange, N. J., Research Assoc., Children's Hospital of Philadelphia

Jose Souza-Moraes, M.D., Servico Especial Saude, Araraquara, Sao Paulo, Brazil, S. A., Physician, Training Health Center

Paul F. Wehrle, M.D., 639 Morrison Drive, Pittsburgh 16, Pa., S.A. Surgeon (R), USPHS.

Karl H. Willers, D.V.M., Surgeon General's Office, Dept. of Army, Washington 25, D. C., Veterinary Officer

School Health Section

Ruth V. Byler, M.A., 42 N. Highland St., West Hartford, Conn., Assoc. Consultant, Health and Physical Education, State Dept. of Education

Dental Health Section

Martin Lunin, D.D.S., M.P.H., 70 Haven Ave., New York 32, N. Y., Research Worker, Columbia Univ., School of Dental and Oral Surgery

B. S. Savara, L.D.S., M.S., 809 N. E. 6th Ave., Portland 14, Ore., Asst. Prof. of Dentistry, Univ. of Oregon Dental School

Richard T. Stern, M.S.P.H., 157 E. Devonia Ave., Mt. Vernon, N. Y., Dental Student, New York Univ.

Chester V. Tossy, D.D.S., M.P.H., Michigan Dept. of Health, Lansing, Mich., Assoc. Chief of Public Health Dentistry

Medical Care Section

Roy A. Anduze, M.D., P.O. Box 696, Charlotte Amalie, St. Thomas, Virgin Islands, Commissioner of Health

Mark Berke, 2024 Mather Way, Elkins Park, Pa., Administrator, Southern Division, Albert Einstein Medical Center

Marian Davis, 207 West First St., 703 State Bldg., Los Angeles 12, Calif., Supervising Occupational Therapist, State Dept. of Public Health

Joanna A. Henry, M.P.H., 60 Eliot St., Milton Mass., Administrative Asst., Massachusetts Memorial Hospital

Miriam J. Jacobs, 325 Frederick Ave., Sewickley, Pa., Staff Physical Therapist, D. T. Watson Home for Crippled Children

Albert W. Kitts, M.D., 402 Dewey Bldg., 13th and Market Sts., Philadelphia 7, Pa., Regional Medical Consultant, National Foundation for Infantile Paralysis

Gerald LaSalle, M.D., D.H.A., University Hospital, University of Montreal, Montreal, Que., Administrator

Herbert R. Luginbuhl, Jr., 5610 Maryland Ave., Falls Church, Va., Nurse Escort, United Mine Workers Welfare & Retirement Fund

Merle H. Ross, 720 Midland Savings Bldg., Denver, Colo., State Representative, National Foundation for Infantile Paralysis

Robert L. Thomas, California Medical Assn., 450 Sutter St., San Francisco, Calif., Asst. Exec. Secy.

Unaffiliated

William E. Burgoyne, M.S., 7 Round Hill Road, Lake Success, N. Y., Student, Harvard School of Public Health

Austin M. Clarke, M.D., D.P.H., Dept. of Health, Fredericton, N.B., Canada, Asst. Chief Medical Officer

Charles E. Dell, 4520 South 36th St., Arlington, Va., Organization and Methods Examiner, USPHS

Gladys T. Edwards, 1555 Sherman St., Denver, Colo., Director of Education, National Farmers Union

Benjamin Jeffries, M.D., 1753 Guardian Bldg., Detroit 26, Mich., Mental Health Consultant, Detroit Board of Health

H. Margaret Lea, M.A., 511 Edgevale Road, Baltimore 10, Md., Health Administrator, Baltimore City Health Dept.

Rubye F. Mullins, 5315 28th St., N.W., Washington 15, D. C., Public Health Adviser, Division of State Grants, USPHS

Carl E. Newell, 230 Pereida St., San Antonio 4, Tex., Venereal Disease Control Non-Commissioned Officer, U. S. Army

Lloyd B. Wescott, Clinton, N. J., President, Hunterdon Medical Center

A.P.H.A. membership blank on page XXVII

ADVANCE REGISTRATION

FOR 80TH ANNUAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

CLEVELAND, OHIO, OCTOBER 20–24, 1952

Members and Fellows of the American Public Health Association and other health workers who are not members who wish to register in advance for the Cleveland Annual Meeting are cordially invited to do so. (NOTE: This year the Registration Desk will be located outside the exhibit hall at the entrance to the Auditorium. Admission to the exhibit area and meeting rooms will be only by display of the official badge. Advance registration will speed your receipt of the badge.)

Each person should fill in the coupon below or a facsimile thereof and mail it with the registration fee to the Central Office. We will prepare for your attendance in advance and you can then pick up your program and badge without delay at a special section as soon as you arrive at Registration Headquarters in the Public Auditorium. At that time your registration will have been recorded and it will only be necessary for you to supply your local hotel and room number to complete the registration procedure. If you know now at which hotel in Cleveland you will be staying, please add this information below.

Advance registrations cannot be accepted and recorded if received in Central Office after October 1, 1952.

Return to American Public Health Assn.,
1790 Broadway, New York 19, N. Y.

I wish to register in advance for the Cleveland Annual Meeting.

NAME .....

BUSINESS ADDRESS .....

CITY & STATE .....

TITLE OF POSITION .....

HOTEL IN CLEVELAND .....

Nonmember of A.P.H.A. Registration fee $4. ☐

Member of A.P.H.A. Registration fee $3. ☐

Fellow of A.P.H.A. Registration fee $3. ☐

Please send check or money order for amount shown

If you will be accompanied by your wife (or husband) or other dependent member of your family who is entitled to free registration, please list the name and address below:

NAME .....RELATIONSHIP TO DELEGATE .....

STREET ADDRESS .....CITY & STATE .....

80TH ANNUAL MEETING

Cleveland, Ohio, October 20–24, 1952

A HOUSING BUREAU has been organized for the 80th Annual Meeting of the A.P.H.A. in Cleveland, October 20–24. Since all requests for rooms are handled in chronological order, it is recommended that you send in your application as quickly as possible.

These rates are subject to change at any time. The list includes some residential hotels which may not have rooms available for conventions at all times.

PLEASE COMPLETE THE APPLICATION FORM ON PAGE 1024 GIVING *ALL* INFORMATION REQUESTED.

*HOTELS HOLDING ROOMS FOR A.P.H.A. AND RATES**

Hotel	*Single*	*Double*	*Twin-Bedded*
Alcazar Hotel	$6.50–8.00	$8.50–10.00	$ 8.50–12.00
Allerton Hotel	4.00–7.00 3.50 RW	6.50– 9.00	7.00–10.00 5.50 RW
Auditorium Hotel	4.00–7.00	6.00– 9.00	8.50– 9.50
Belmont Hotel	3.25–3.50	5.00– 5.75	4.25– 6.25
Bolton Square Hotel	3.50–5.00	5.50– 7.00	6.00– 7.50
Carter Hotel	4.00–7.50	6.00–10.00	8.00–12.00
Cleveland Hotel	4.50–8.00	7.00–10.00	10.00–15.00
Commodore Hotel	6.00–7.50	8.00–10.00	8.50–12.00
Hollender Hotel	4.00–8.00	6.00–12.00	8.00–15.00
Lake Shore Hotel	5.00 up	8.00 up	8.00 up
New Amsterdam Hotel	3.00–4.00	5.50– 6.00	6.00– 7.00
Olmsted Hotel	3.75–6.00	6.50– 9.00	7.50– 9.50
Park Lane Villa	5.00	6.00	7.00– 8.00
Quad Hall Hotel	3.00–6.00		6.00–10.00
St. Regis Hotel	3.00–4.00	5.00– 8.00	5.00– 8.00
Sovereign Hotel	5.00–6.00	6.00–10.00	6.00–11.00
Statler Hotel	4.50–9.00	7.50–10.50	9.00–14.00
Stockbridge Hotel	3.00	5.00	6.00
Tudor Arms Hotel	4.50 up		7.00 up
Wade Park Manor	5.50 up	7.50 up	8.50 up
Westlake Hotel	5.00–6.00	8.00– 9.00	9.00

* Parlor suites available. Rates on request.

SCIENTIFIC EXHIBITS AT THE CLEVELAND ANNUAL MEETING

The Committee on Scientific Exhibits is accepting applications for scientific exhibit space at the 80th Annual Meeting. Health departments, schools of public health, and voluntary agencies are invited to participate. Individual research projects may also be exhibited.

Applications for space may be obtained from the Association Office—1790 Broadway, New York 19.

HOTEL RESERVATION FORM

MAIL TO: Mrs. Louise D. Perkins, Director
A.P.H.A. Housing Bureau
511 Terminal Tower
Cleveland 13, Ohio

Single rooms are very scarce. Please indicate if you would be willing to share a twin-bedded room with another member.
Yes ..... No. .....

PLEASE MAKE RESERVATIONS NOTED BELOW: (Please print or type.)

First Choice ..... Hotel Arrival: ....., at ..... a.m. ..... p.m.

Second Choice ..... Hotel Departure: ....., at ..... a.m. ..... p.m.

Third Choice ..... Hotel

..... Single room @ $ .... Twin-bedded room @ $ .....

..... Double room @ $ .....

NAMES OF ALL OCCUPANTS: *ADDRESSES:*

....

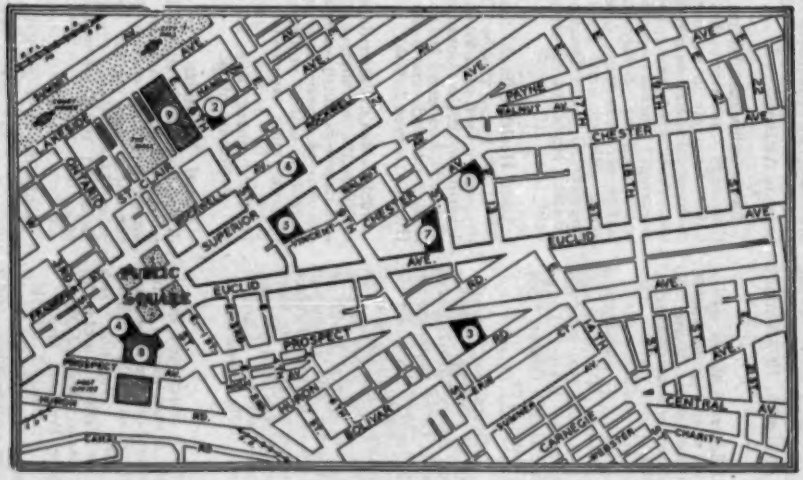
....

....

MAIL CONFIRMATION TO: Signed: .....

Address: .....
City Zone State

Street Plan of Cleveland Showing Location of Housing Bureau Hotels



Key

1. Allerton Hotel
2. Auditorium Hotel
3. Carter Hotel
4. Cleveland Hotel
5. Hollenden Hotel
6. Olmsted Hotel
7. Statler Hotel
8. Union Station—Terminal Tower
9. Public Auditorium

Hotel Reservation form is on page 1024. Please indicate your first, second, and third choice hotel. Single rooms are limited.

All reservations will be confirmed if requests are received not later than October 10.

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Public Health Physician—as medical director of bi-county health department in southwestern Illinois on Ohio and Mississippi Rivers. Important public health job to be done. Salary $7,000. Write: Guy Jones, Secretary, Alexander-Pulaski Bi-County Board of Health, 1009 Walnut St., Cairo, Ill.

Four Health Officers—Salaries up to $7,200 for untrained men; up to $10,800 for trained experienced men. Write: N. H. Dyer, M.D., State Director of Health, Charleston 5, W. Va.

There are several vacancies for qualified **Health Officers** in Texas. Entrance salary up to $8,400 per year, plus $600 per year as a car allowance. Write: George W. Cox, M.D., State Health Officer, State Dept. of Health, Austin, Tex.

Public Health Officers—for counties and **Chief, Bureau of Venereal Disease and Cancer Control.** Salary $690–773, plus $25 monthly bonus. Three years experience as public health physician, or graduate training in public health.

Psychologist—Salary $481–565 plus $25 monthly bonus. Three years of professional experience in mental health or mental hospital program, and graduation from a college or university of recognized standing supplemented by graduate work leading to a master's degree in psychology. Write air mail to: President, Board of Health, P.O. Box 3378, Honolulu 1, Hawaii.

Psychiatrist—who is interested in developing, as director, a state mental health program. Work would include organizing and conducting traveling child guidance clinics. Salary open. Vacation, sick leave, retirement. Write: Harold M. Erickson, M.D., State Health Officer, State Office Building, Portland, Ore.

Health Educator—for health coördinator position in large metropolitan school system. Require training in education, preferably teaching experience, and master's degree in health education. Man preferred. Salary $6,270. Write: **Box HE-45**, Employment Service, APHA.

Director of Public Health—Must be qualified M.D. as director of city-county health unit in city with metropolitan population of 200,000; salary from $9,000, depending on qualifications and experience. Write: Box **P.H.-32**, Employment Service, APHA.

Two Industrial Health Engineers—University industrial health program, Calif. Graduate in engineering from accredited college or university. Minimum four years experience public health engineering. Eligible for professional registration in Calif. Salary Range $481–584 in five per cent steps. Retirement program. Write: Fred R. Ingram, Chief Engineer, Dept. of Occupational Health, Cowell Memorial Hospital, Berkeley, Calif.

Local Health Officer—Salary from $10,500–11,500 for a qualified Public Health physician in well established county health department, Weld County, Greeley, Colo. Write: R. L. Cleere, M.D., Executive Director, Colorado State Dept. of Public Health, Denver 2, Colo.

Public Health Nutritionist—Beginning salary $4,195 per annum; must have suitable degree in nutrition or allied field and one year of experience in nutrition work. Candidates will be requested to answer a training and experience questionnaire. Write: City Service Commission, City Hall, Milwaukee, Wis., for announcement and application blank.

Dental Hygienist—For public health dental program in city of 60,000. Excellent working conditions. Variety of duties, including sodium fluoride, health education, and clinical dental hygiene. Salary $3,000. Write: City-County Health Dept., 241 W. South Street, Kalamazoo, Mich.

Sanitarian—For work in a rural community. Some experience or knowledge of procedure required. Most necessary is a willingness to meet and work with people on a friendly basis. Salary to start at about $3,000. Travel $85 per month. Write: Dr. Preston E. Wright, M.D., Golconda, Ill.

Nurse—for Hardin County; a good place to work. Salary from $2,200–$2,500, depending on qualifications. If certified public health nurse, salary $2,600–$3,000. Travel $65 per month. Write: Preston E. Wright, M.D., Golconda, Ill.

Public Health Nurses—Generalized program in suburban area. Staff education and student program. Five-day week, vacations, sick leave, and retirement benefits. Write: Jack H. Foster, Personnel Director, The Court House, Arlington, Va.

Senior Public Health Nurse—for staff position, progressive urban service, salary $3,300–3,600, travel $60 per month. Five-day week, two weeks vacation, sick leave, excellent retirement benefits. Write: Olivia Smythe, R.N., Director, Division of Public Health Nursing, Dallas, Tex.

Supervisor of Nurses and Staff Nurse—Well established county health department in north central Illinois. Population of county 76,000, two universities. Generalized nursing program. Excellent salary for qualified individual and travel allowance for personal car. Retirement plan, sick leave, vacation, undergraduate student program. Write: Director, McLean County Health Dept., 1009 N. Park St., Bloomington, Ill.

Public Health Nurse—for generalized nursing service in city of 25,000. Salary $265–300 per month. Forty-hour, five-day week. Write: Miss June Triplett, Supervisor, City Hall, Winona, Minn.

Several Public Health Nurses II—positions available. Salary range $296–360 per month, 40-hour week. Write: Miss Margaret Macgregor, Personnel Technician, Dept. of Civil Service and Personnel, 402 Civic Center, San Diego 1, Calif.

Nurses—Generalized program in health department serving city of 71,000. Starting salary between $255–270 per month, depending on qualifications, plus hospital and surgical insurance and retirement benefits. Training and/or experience preferred. Write: Nursing Supervisor, Racine Health Dept., City Hall, Racine, Wis.

Public Health Nurse—for generalized program with special emphasis on school health services in suburban situation. Good personnel policies, vacation, sick leave, retirement plan. Salary range $265–340 per month, $50 per month travel allowance for use of your car or full maintenance of your car by village. Write: H. S. Miller, M.D., Health Officer, Village Hall, Winnetka, Ill.

Two Public Health Nurses—for generalized program, urban and rural area, three-week annual vacation, sick leave, retirement benefits, 7½¢ per mile, five-day week. Salary range: $290–330.

Two qualified **Sanitarians or Junior Sanitarians**—for generalized program, urban and rural area, three-week annual leave, retirement benefits, 7½¢ per mile, five-day week. Salary range: junior sanitarian $230–320, Sanitarian $280–370. Write: Dr. D. D. Carr, Clark County Health Dept., Las Vegas, Nev.

Director of Nurses—Demonstration voluntary agency in process of expansion. Nursing staff expected to be about 25 to 35. Combination nursing service now being planned. Opportunity for teaching. Starting salary $4,500–5,500, depending upon qualifications. Experience in supervision and bachelor's degree required; M.P.H. or master's desirable. Excellent personnel policies. Write: Bernard M. Blum, M.D., Director, The Fife-Hamill Memorial Health Center, 7th and Delancey Sts., Philadelphia 6, Pa.

POSITIONS WANTED

Industrial Hygienist—Master's degree in industrial toxicology. Four years experience in clinical biochemistry and industrial analytical chemistry. Prefer position in East with large organization. Write: **Box 1H–5**, Employment Service, APHA.

Director of Milk or Food Division—B.S. degree in agriculture, major in dairy industry. Master's degree in public health. Eight years responsible experience with large local health department. Write: **Box S–16**, Employment Service, APHA.

Health Educator. M.A.—requirements nearly completed for doctorate degree in public health education. Two years as school health educator and four years with voluntary health agency. Desires position as administrator or health educator with forward-looking official or voluntary health agency, or teaching position on college level. Two hundred miles radius of

either New York City or Washington, D. C. Excellent references. Male, age 36, veteran. Resume sent on request. Write: **Box HE-46.** Employment Service, APHA.

Bacteriologist—Ph.D. Age 31, leaving military service. Experienced in teaching and research. Desires responsible position with opportunities for research. Interests in medical and sanitary bacteriology. Write: Lt. I. Olitzky, Second Army Area Medical Laboratory, Ft. George G. Meade, Md.

Public Health (Sanitary) Engineer—Young married veteran with four years experience in the field of public health with county and state departments of health desires a permanent position with opportunity for advancement. Water, sewage, industrial wastes, and garbage disposal experience. Willing to travel. Write **Box E-17,** Employment Service, APHA.

Public Health Nursing Consultant—or Director of Nurses. B.S. and M.P.H. degree. Experience as supervisor and consultant. Available August, 1952. Write: **Box M-8,** Employment Service, APHA.

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

WANTED—(a) ASSOCIATE PROFESSOR, department of preventive medicine and public health, university medical school; opportunity research. (b) COMMISSIONER OF HEALTH to succeed commissioner resigning after 20-year tenure; university city. (c) ASSISTANT PROFESSOR, public health nursing, qualified develop four-year college training program; state university; $6,000. (d) DIRECTOR, visiting nurse association; college town near Chicago; minimum $5,000. (e) PUBLIC HEALTH NURSE to supervise school health program; California. (f) HEALTH EDUCATOR, state program; five years' experience; $5,000-$6,500. (g) Two SANITARIANS; foreign assignments; $7,000. (If you will write for our ANALYSIS FORM, we shall prepare an individual survey of opportunities which meet your requirements.)

WANTED—OPPORTUNITIES FOR THE FOLLOWING: (a) HEALTH EDUCATOR; M.P.H., Ed.D. (Health Education, Administration), Columbia and Harvard; four years, teaching; six years, director, health education, state health organization. (b) PUBLIC HEALTH NURSE ADMINISTRATOR; M.P.H.; four years, consultant, metropolitan health department; three years, director, health program, city-county department. (c) PUBLIC HEALTH PHYSICIAN; M.P.H., Yale; six years, Director Industrial Hygiene, city health department; Board eligible. (d) SANITARY ENGINEER; B.S. (Civil Engineering); year's graduate training, Harvard; 12 years' experience. Inquiries should be sent to: MEDICAL BUREAU (Burneice Larson, Director), PALMOLIVE BUILDING, CHICAGO.

NEWS FROM THE FIELD

WHO News

PROFESSOR WINSLOW RESPONDS TO LEON BERNARD PRIZE OF WHO

The *Journal* has carried a notice of the receipt in May by Professor Charles-Edward Amory Winslow of New Haven, Conn., of the Leon Bernard Medal of the World Health Organization. Professor Winslow was described by Dr. Axel Hojer, president of the Assembly, as "a true statesman in the field of public health, a great and dearly beloved teacher, a valiant warrior in the cause of better housing, public health education, and social medicine."

At the request of some of the Americans attending the presentation ceremony, the managing editor is publishing Professor Winslow's response:

"Mr. President and members of the Assembly, I can find no adequate words to express the gratitude which I feel for this honor which you have conferred upon me. The Leon Bernard award is the highest recognition which can come to any laborer in the field of public health, proceeding, as it does, from this great organization which represents the central leadership in health protection and health promotion of the more than three-score free and sovereign states which make up the population of the world.

"There are several special reasons why this honor is particularly precious to the present recipient.

"In the first place, I prize this award not only for itse'f, but because it is a special privilege to have my name follow that of Rene Sand, with whom I was intimately associated in the direction of the League of Red Cross Societies more than 30 years ago. I have seen the science and art of public health broaden its vision and deepen its scope, from sanitation and communicable-disease control to positive health promotion and to the far reaching concepts of social medicine; and no man in any of the public health professions has done more than Rene Sand to further this advance. 'Social medicine' and 'Rene Sand' are almost synonymous terms.

"Furthermore, this honor means more to me because it comes through the recommendation of a committee of which Jacques Parisot is chairman. My intimate acquaintance with Professor Parisot dates back to 1929, when he and I were members of a study committee of the Health Organization of the League of Nations which traveled through Germany and Austria to observe the development of health insurance programs in those countries, and in 1936, we were again fellow members of a League of Nations committee to study the health program of the Soviet Union. In hotels and railroad trains and on long automobile trips one gets to know one's companions well—and, in the case of Jacques Parisot, to love and admire them. Jules Cambon, when he was Ambassador of France in Washington, once described the qualities of the French mind in six words: 'la clarte, la nettete, la logique.' Add to those words 'elan' and 'verve' and you have Professor Parisot. You will note that a personality so representative of his great country can only be described adequately in the words of its noble language.

"Finally, I prize this award because it was established to honor another great Frenchman, Leon Bernard, worthy successor of Dupre, of Leuret, of Bretonneau, of Gendron de l'Eure in the early 19th century, of Pasteur and of Calmette in later years.

"My personal acquaintance with Bernard goes back for 30 years, and I should like to cite one episode of our association which has perhaps some historical significance and is not, as far as I am aware, anywhere a matter of printed record. The League of Nations was considering the possibility of establishing its Health Section, the precursor of the present World Health Organization; and a small group of us were asked to make recommendations in regard to the desirability of this step. On 5 May 1921, Bernard, Buchanan, Dame Rachel Crowdy and Stiegman of England, Carozzi and Lutrario of Italy, and Sucki of Japan met to consider the problem. We were faced at the outset of the meeting by a statement from the French Foreign Office that the State Department of the United States was opposed to the creation of a new body which might rival the Office International d'Hygiene Publique and the Pan American Sanitary Bureau. This was a staggering blow. Lutrario wanted to adjourn at once. Buchanan proposed postponing action until a new international conference could be called. But Professor Bernard and I, who were not governmental representatives, did not share the diplomatic

fears of our governments. After a long struggle, we persuaded the members present to adjourn officially that day and to meet again informally as individuals on the morrow. On May 6, this unofficial group made to the League of Nations specific recommendations for the creation of the Health Organization of the League, and sowed the first small seed for the foundation of the global health program which WHO so admirably represents today.

"I therefore prize this award not only for its own supreme significance, but because of its associations with Rene Sand, with Jacques Parisot and with Leon Bernard.

"That the award comes to me is not due to any merit of my own. I owe it to the two great leaders of American public health, William T. Sedgwick and Hermann M. Biggs, with whom I had the honor of close association in my youth. Above all, I owe it to the fact that I happened to enter the field of public health almost at the beginning of its great development and to grow up, step by step, with its advancing progress. You have selected me as the symbol of the labors of thousands in this field during the past half-century: of health officers, of engineers, of nurses, of students of social medicine. In their name and on their behalf I accept this award."

Meeting of Executive Board

The 10th meeting of the Executive Board of WHO was held in Geneva for a week beginning May 29. The outgoing chairman was Dr. Jacques Parisot of France. Dr. M. Jafar, director-general of health of Pakistan, was unanimously elected chairman. Dr. G. A. Canaperia of Italy and Dr. A. H. Taba of Iran were elected vice-chairmen.

The Board decided to hold the Sixth World Health Assembly in Geneva beginning May 5, 1953. Among the matters planned for the program are informal technical discussions on methods of applying modern health technics that will have the most effective and most economical results in long-term programs in the control of tuberculosis, syphilis, and the typhoid group of fevers.

The new president, Dr. Jafar, declared that a technically qualified public health administrator has as yet to be recognized by most of the world's governments and is usually made to play a secondary role in making and executing health policies in his country. WHO should advise national governments on the desirability of changing this pattern if they are sincere in wanting development of public health activities in their areas.

Dr. Dorolle Visits the Americas

Dr. Pierre Dorolle, deputy director-general of WHO, is completing a two month trip to the Americas. He presented WHO's annual report to the 14th meeting of the Social and Economic Council of the United Nations in New York on June 19. After visiting the Pan American Sanitary Bureau, WHO's regional office for the Western Hemisphere, in Washington, D. C., Dr. Dorolle visited Argentina, Brazil, Chile, Colombia, Ecuador, Peru, and Uruguay. He returns to Geneva about mid-August.

No Action on Population Problems

Population problems were discussed at length by the World Health Assembly's Committee on Program and Budget, in the closing sessions of the Fifth World Health Assembly. Norway introduced a resolution requesting that an expert committee on the medical and sociomedical aspects of the population problem be established. Belgium, Italy, and Lebanon introduced jointly a resolution that such problems did not presently, from a purely medical standpoint, require WHO action. India, which has itself begun a pilot study of its own population problems, suggested that the director-general and the regional committees study the question. In the interest of harmony within WHO, all three resolutions were withdrawn. Apropos of this discussion, C.-E. A. Winslow in his address opening the Fifth World Health Assembly said: "Where limitation of population is a pressing problem, there are more humane agents

of control than malaria and tuberculosis."

Communicable Disease Workshop

A Communicable Disease Workshop sponsored by the Pan American Sanitary Bureau, regional office for the Americas of WHO, was held in Lima, Peru, for six weeks beginning June 30. Workshop teachers were drawn from the Bureau's staff and public health agencies and schools of nursing in Brazil, Chile, and Panama. Trainees included directors and other staff members of most of the official health agencies of South America.

Assistance to Finland

Finland and WHO's Regional Office in Europe have concluded an agreement whereby Finland will have WHO assistance in undertaking 10 new health programs. Under the UN Expanded Program of Technical Assistance, WHO will help Finland in control of communicable diseases, including tuberculosis and venereal diseases, as well as in health education, child health, and nutrition, among other public health programs. Fourteen WHO experts will advise the Finnish government on a variety of activities. Fellowships will be granted to a total of 52 physicians, nurses, sanitary engineers, and other categories of Finland's health personnel.

1952 NEW ENGLAND HEALTH INSTITUTE

The 18th New England Health Institute was held at the University of Connecticut, Storrs, June 18–20, under the auspices of the Connecticut State Department of Health.

The first New England Health Institute was held in Hartford, Conn., in 1922, at the suggestion of the U. S. Public Health Service. Joining in this earlier occasion were the state boards and departments of health of six New England states, the Public Health Service and the medical schools of Yale and Harvard Universities. Since the first Institute these meetings have rotated to most of the other New England states, except for years when war or unfavorable economic conditions interfered.

"New Efforts for Health Improvement" was the theme of the 18th meeting. The three-day schedule was filled with lectures and group discussions with participants from New England and many other states. Sponsorship was by 32 agencies, including the state departments of health of Connecticut, Maine, New Hampshire, Rhode Island, and Vermont. The 1953 meeting of the Institute will be held in Rhode Island.

FOUR-YEAR MEDICAL SCHOOL FOR MISSOURI

As a result of a $6,000,000 appropriation by the State Legislature, Missouri's two-year medical school is to be expanded into a four-year school, capable of graduating from 60 to 80 students a year. Located in Columbia as a part of the University of Missouri, facilities will include a State Health Center with a 250-bed teaching hospital among other facilities.

Because of the importance of providing more doctors and better medical services for rural Missouri, the expanded medical school will remain in Columbia. The city, with a population of 35,000, is in the center of the state, the largest city in an eight-county area of about 200,000 persons.

ENGINEER-SANITARIAN CODE OF ETHICS

The Code of Ethics for environmental sanitation personnel recently adopted by the Conference of Municipal Public Health Engineers is commented on editorially in the May, 1952, issue of *Modern Sanitation*, thus: "We visualize this Code of Ethics as helping the individual health department employee to rightly organize his thinking as to his obligations to himself, his department, and to the public. Too often the green

appointee is subjected to pressures and temptations without any prior conditioning as to proper behavior. Too often, also, appointments are made at inadequate salaries and in a political atmosphere of civil service qualifications cynically ignored or circumvented; thus the new employee may feel he has been licensed to make what he can from the job."

The complete Code follows:

Employees of the Department of Health, engaged in the control of the environment on behalf of the public health, recognize the obligations of public trust and the responsibilities related to the exercise of police power under which *it shall be considered improper conduct and inconsistent with the dignity and honor of public service:*

1. To solicit or accept—either directly or indirectly—gratuities, favors, or other valuable consideration from those subject to official regulation by the employing agency where such gratuities, favors, or other valuable consideration are intended or could be construed to influence official action.
2. To engage in the preparation of plans or the performance of services outside of official duties which are subject to review or approval by the employing agency.
3. To represent or promote any enterprise, product, service, or patent directly or indirectly in the course of regulatory work where such action may benefit the official employee.
4. To have a business interest, other than ownership of stock not involving a controlling interest, in any enterprise, product, service, or patent used by those subject to regulation by the employing agency.
5. To engage in political activity as an officer of a political party, or to abuse official authority or compromise the health department through political activity.

Copies of the Code may be obtained from *Modern Sanitation,* 855 Avenue of the Americas, New York 1.

HOUSEHOLD SEWAGE DISPOSAL STUDIES

The second in a series of *Studies on Household Sewage Disposal Systems,* has been published by the Cincinnati Environmental Health Center, Part I having been published early in 1950 (*A.J.P.H.* 40:6, June, 1950. p. 782). The studies were initiated jointly by the Housing and Home Finance Agency and the Public Health Service in 1947 "to establish the factual foundation necessary for effective design concepts for the use of governmental agencies as well as others." Although this second report, Part II, was written in 1950, it has just been published. Government Printing Office, Washington 25, D. C., 55¢.

SCHOOL LUNCH SANITATION CONFERENCE

More than 10,000,000 children eat lunches at schools during the school year. Because an earlier exploration indicated that sanitary supervision by health departments of school lunch programs was weak, a School Lunch Service Sanitation Workshop was organized and met in Roanoke, Va., March 7–9, to discuss desirable features of a good program. Representatives of school and school food service administration, environmental sanitation, public health administration, and nutrition comprised the conference group. Discussions dealt with administration, facilities, and personnel employed in school lunchrooms.

The conference was called by the management of *Modern Sanitation,* and financial assistance was given by the Public Health Commitee of the Paper Cup and Container Institute. A report of the conference, including the detailed recommendations adopted and written by Mayhew Derryberry, Ph.D., appears in the May, 1952, issue of *Modern Sanitation,* 855 Avenue of the Americas, New York 1.

1953 FULBRIGHT APPLICATIONS

October 15, 1952, is the closing date for applications for Fulbright awards for university lecturing and postdoctoral level research in Europe and the Near

East. Programs are arranged for in Austria, Belgium, Denmark, Egypt, France, Greece, Iraq, Italy, Japan, Luxembourg, Netherlands, Norway, Pakistan, Turkey, Union of South Africa, and The United Kingdom and Colonial Dependencies. A detailed program booklet concerning the awards became available early in July. Booklet and further inquiries from Francis A. Young, Executive Secretary, Committee on International Exchange of Persons, 2101 Constitution Ave., N. W., Washington 25, D. C.

EASTERN REGIONAL RABIES COUNCIL

The South Middle Atlantic Regional Rabies Conference was held in Washington, D. C., June 2–3. Called by the Public Health Service staff of the FSA Region III Office, it was cosponsored by the Fish and Wildlife Service of the Interior Department and the Bureau of Animal Industry of the Department of Agriculture. State delegates representing public health, livestock disease control, and wildlife conservation from 11 states and the District of Columbia participated in the Conference.

An Eastern Regional Rabies Council, to be a continuing body representing the states that took part in the Conference, was established to develop plans and procedures to put the Conference recommendations into effect. Martin P. Hines, D.V.M., chief of the Veterinary Public Health Section, North Carolina State Board of Health, was named chairman of the Council and Albert S. McCown, M.D., director of the Bureau of Communicable Disease Control, Virginia State Health Department, secretary.

The text of the recommendations adopted follows:

WHEREAS, rabies is established and appears to be spreading through the Middle and South Atlantic states and so constitutes a serious threat to human health, agricultural economy, and wildlife resources of this area, representatives of the affected states and the personnel of the responsible Federal agencies met in Washington, D. C., on June 2 and 3, 1952, and in closing agreed as follows:

1. That each of the affected states inaugurate coördinated programs for the control of rabies; that each state's program can most effectively be carried out through the creation of a committee composed of representatives from these agencies at the state level responsible for public health, livestock disease control, and wildlife conservation. This Committee will maintain close coöperation with the unofficial organizations interested in rabies control; that each state Committee designate one of its members, preferably the state Public Health Veterinarian, where one exists, as the permanent secretary, the duties of the secretary to include the exchange of current rabies control information between states.

2. That each state arrange for adequate diagnostic facilities, including animal inoculation of any Negri negative and questionable specimens.

3. That each state arrange for the reporting of rabies cases in ALL animals, reports to be collected by an approved state agency, and that the State Health Officer include these data in the weekly telegraphic reports to the U. S. Public Health Service.

4. The Conference recognizes the importance of rabies in wildlife and recommends that investigations be undertaken to study the epizootiology of the disease in wild fauna in order to improve methods of control.

5. That technical assistance and guidance is available from the U. S. Public Health Service, the U. S. Fish and Wildlife Service and the U. S. Bureau of Animal Industry.

CUBAN STAMP HONORS MISS MAASS

Dr. Luis Espinosa y G. Caceres, the director of international relations for the Ministry of Health and Social Assistance in Cuba, has sent to the American Public Health Association examples of the stamp recently issued by the Government of Cuba honoring Clara Louise Maass, a nurse who died in connection with the yellow fever studies conducted by Walter Reed, M.D., and his associates in Cuba. The stamp carries a portrait of Miss Maass, 1876–1901, a sketch of the Lutheran Memorial Hospital in Newark, N. J., where she trained, and a sketch of the Hospital

Las Animas, Havana, Cuba. The inscription, translated, reads "For science and humanity in peace and in war."

UNIFORM POULTRY REGULATIONS?

Because some serious problems are being created in the poultry industry by health regulations springing up in a number of cities and states, seven each of representatives of the Institute of American Poultry Industries and of public health met in Chicago May 23, to discuss means of assuring the public good poultry products without building trade barriers. Many of the regulations, no two of which are exactly alike, act as trade barriers and revenue measures.

Action taken was: (1) The public health representatives assigned a full-time man to the job of preparing speedily a proposed basic code covering poultry processing sanitation. (2) A subcommittee of three each from public health and from industry was appointed to review the proposal before it is submitted to the whole liaison committee of 14. (3) Cities and states were urged to postpone poultry processing regulations until the basic proposal becomes available.

Public health representatives on the subcommittee are: R. K. Anderson, D.V.M., Denver Department of Health; John D. Porterfield, M.D., Ohio state health officer and secretary, State and Territorial Health Officers Association; and T. E. Sullivan, Indiana State Board of Health. Industry representatives are: Ray E. Firestone, Firestone and Company, Inc.; W. H. Haskell, V.M.D., Klenzade Products, Inc.; and C. H. Koonz, Swift & Company.

DETROIT SURVEYS TUBERCULOSIS AND VD

To determine the extent of venereal disease and tuberculosis in high incidence areas, the Michigan State Health Department and the Detroit Health Department are carrying on a special detection project. Areas being surveyed are selected on the basis of known high incidence of venereal disease as determined by records of the Detroit Health Department. It is assumed that these areas also have a high incidence of tuberculosis. From 30 to 60 stations for taking blood samples have been established. Mobile x-ray units are in operation in conjunction with the blood sampling stations so that chest roentgenograms can be obtained of the same persons who volunteer for the blood tests. Blood samples are sent to the State Health Department laboratories for analysis, and the roentgenograms are processed in the Division of Tuberculosis and Venereal Disease Control. Positive venereal disease findings are reported to the Detroit Social Hygiene Clinic. Indigent persons found to have venereal disease are treated by the clinic; others, referred to practising physicians.

HEALTH OF REHOUSED FAMILIES

For several years the Joint Committee on Housing and Health of the American Public Health Association and the National Association of Housing Officials has been concerned with the lack of critical evaluation of the effects on the health and social adjustment of families rehoused in public housing projects, and with the technical problems that have arisen whenever attempts at such evaluation have been undertaken. Concurrently the Baltimore City Health Department, the Baltimore Housing Authority, and the Johns Hopkins School of Hygiene and Public Health have had a common interest in the social and health problems involved in public housing and slum clearance.

These related interests have resulted in a proposed study of the effects on health and social adjustment of slum families rehoused in public housing projects. The study will be directed by the Johns Hopkins School of Hygiene and Public Health and sponsored by the

School, the Baltimore City Health Department, and the Baltimore Housing Authority, with the Joint Committee on Housing and Health acting as a consulting committee for the project.

W. Thurber Fales, Sc.D., representing both the School of Hygiene and Public Health and the Baltimore City Health Department, is chairman of the study committee. Other members are:

Johns Hopkins University
Professor William G. Cochran, Biostatistics
Professor Cornelius W. Kruse, Sanitary Engineering
Paul V. Lemkau, M.D., Public Health Administration
Philip E. Sartwell, M.D., Epidemiology

Baltimore City Housing Authority
Morton Hoffman
Sara Shuman

The study is designed as a controlled investigation which will yield valid data on the effect of public housing on the health of families so rehoused, using health in its broadest sense of physical, psychological, and social well-being. Despite manifest difficulties in the way of determining broad health and social changes, it is proposed to deal in so far as possible with the total problem of what happens when a population is moved from an area of substandard housing to a public housing project. Thus an appraisal is necessary of the whole environment in which the families live before and after moving, rather than limited concern with physical deficiencies in the actual housing from which they are removed. A long-term study is visualized, since many technical difficulties in making objective measurements must be solved and observations continued for a period long enough to measure gradual changes in health and social efficiency.

Because of the interest in such a study on the part of the Committee on the Hygiene of Housing, Bleecker Marquette and Huntington Williams, M.D., of the Joint Committee on Housing and Health, reported on the proposed Baltimore study at the committee meeting in New York on June 24.

The Committee on the Hygiene of Housing, believing that the membership of the Baltimore committee insures that all variables will be tracked down and accounted for, passed a unanimous resolution that, "the members of the Committee on the Hygiene of Housing at its recent New York meeting expressed their hearty personal approval of the Baltimore Committee's proposal to study the effects of public housing on the health and social adjustment of rehoused families."

MORBIDITY STATISTICS CLEARINGHOUSE

A clearinghouse for current studies and surveys of morbidity has recently been established under the auspices of the Public Health Conference on Records and Statistics. Its purpose is to help public health and medical workers find out where specific data on diseases, injuries, and impairments may be obtained. It will also enable those planning new projects involving the measurement of illness to benefit from the experience of others who have undertaken similar tasks.

The Clearinghouse will at regular intervals conduct a canvass to learn about studies in progress. With the permission of those responsible for the projects, lists of new projects containing brief outlines of the methods used and the data collected will be released from time to time.

The Clearinghouse on Current Morbidity Statistics Projects is devoted to the development and promotion of public health record systems and statistical information. Its membership is made up chiefly of representatives from state and large city health departments, voluntary health associations, and the Public Health Service.

Inquiries may be directed to: Clear-

inghouse on Current Morbidity Statistics Projects, Division of Public Health Methods, Public Health Service, Washington 25, D. C.

ANOTHER NEW SCIENTIFIC JOURNAL

Applied Microbiology will begin publication in January, 1953, under the auspices of the Society of American Bacteriologists. It will deal with the applications of microbiology to industry, foods, sanitation, in fact all aspects except the microbiology of animal and plant disease. A bimonthly, its annual subscription price will be $7.50. The Williams & Wilkins Company, Baltimore 2, Md., will be the publishers.

GRANT FOR HEART DISEASE STUDY

The Harvard School of Public Health has received a grant of $10,000 from Mr. and Mrs. A. M. Sonnabend of Boston. This gift will make possible the application of basic experimental findings in the treatment and clinical investigation of patients with heart disease, especially that resulting in acute lung edema. Studies are being carried on by Stanley J. Sarnoff, M.D., associate professor of physiology at the School, and will be carried forward in the recently completed cardiac catheterization laboratories of the Children's Medical Center and Peter Bent Brigham Hospital.

AMERICAN REHABILITATION COMMITTEE

At the recent annual meeting of the American Rehabilitation Committee the following officers were elected:

President: Katharine Ecob
Chairman of the Board of Directors: John Edward Sullivan, M.D.
Secretary-Treasurer: Madge C. L. McGuinness, M.D.

Frederic G. Elton was appointed director. Offices are at 28 E. 21st St., New York 10.

PERSONALS

MARION R. ALLEN, has been named winner of the 1952 Kenfield Memorial Scholarship, of the Teachers' Committee, American Hearing Society, Washington, D. C., which makes the award annually to a prospective teacher of lip-reading.

J. BURNS AMBERSON, M.D., visiting physician in charge of the Chest Service of Bellevue Hospital in New York City, received the 1952 Trudeau Medal of the National Tuberculosis Association for the "most meritorious contribution on the cause, prevention or treatment of tuberculosis," at the Association's Annual Meeting in Boston, Mass., in May.

JOHN Z. BOWERS, M.D., dean, University of Utah College of Medicine, has completed a two-month leave of absence to serve as a consultant on health education to the Ford Foundation. He spent the period in India evaluating health and medical problems in the villages and determining the feasibility of a program for health education.

WILLIAM F. BROWN, M.D., who has been director of the Division of Venereal Disease Control, Arkansas State Health Department, since July, 1951, on loan from the U. S. Public Health Service, has been made consultant in venereal diseases, Region 6, FSA, with headquarters in Atlanta, Ga.

JUDGE PETER CANTLINE, Newburgh, has retired as chairman of the State Committee on Tuberculosis and Public Health, New York State Charities Aid Association, after 18 years of service. He has been succeeded by LELAND D. MCCORMAC of Syracuse, N. Y.

LOIS E. CARPENTER, R.N., has succeeded MARY COYER, R.N., resigned, as public health nurse in the Lorain County General Health District, Ohio.

A. L. CARSON, JR., M.D.,* director of the Division of Specialized Medical Services, has been made director of the Division of Local Health Services, Virginia State Department of Health, succeeding J. C. NEALE, JR., M.D.,* resigned.

WALTER CLARKE, M.D.,* executive director of the American Social Hygiene Association and clinical professor of public health practice at Harvard University, has been appointed a Fulbright Professor to teach the 1952–1953 school year at the University of the Philippines. ELEANOR SHENEHON, who has directed the American Social Hygiene Association's Washington, D. C., liaison office for several years, has been appointed acting executive director.

* Fellow.
† Member.

LOWELL T. COGGESHALL, M.D.,* dean of the University of Chicago, Division of Biological Sciences and Frederick H. Rawson Professor of Medicine, was elected recently president of the Chicago Society of Internal Medicine.

PATRICK HENRY COSTELLO, secretary of the National Association of Boards of Pharmacy and of the American Council on Pharmaceutical Education, has been selected to receive the 1952 Remington Honor Medal, pharmacy's highest award, to be presented at a meeting of the New York Branch of the American Pharmaceutical Association in December.

EDWIN L. CROSBY, M.D.,* director of the Johns Hopkins Hospital and president-elect of the American Hospital Association, has been appointed executive director of the Joint Commission on Accreditation of Hospitals.

MERRILL DAWSON,† rehabilitation consultant of the Pennsylvania Tuberculosis and Health Society, has been named president of the newly organized Pennsylvania Rehabilitation Association.

ARTHUR M. DEWEES,† after 34 years of service as executive secretary of the Pennsylvania Tuberculosis and Health Society, has resigned but will continue as consultant. He has been succeeded by R. WINFIELD SMITH,* assistant executive and field secretary of the Society.

HARRY K. DILLARD, M.D., recently in private practice in Warsaw, Ky., has been made director of the Division of School Health, Kentucky State Health Department.

SIMON DOFF, M.D., of the Bureau of Tuberculosis Control, Florida State Health Department, has been made head of a new Division of Heart Disease Control in the Bureau.

WILLIAM G. DONALD, M.D., director of Student Health Service and Cowell Hospital, University of California Medical School, has been appointed director of the University's new Division of Occupational Health.

VIVIAN V. DRENCKHAHN, M.P.H.,* director of the National Tuberculosis Association's Health Education Service, has resigned to become consultant in public health education for the European Regional Office of WHO in Geneva.

JOHN P. EICHHORN, M.D., has been appointed the first medical director of the health center of the International Ladies Garment Workers Union in Cleveland, Ohio, where approximately 5,000 union members employed by contributing firms will receive annual health examinations.

HAROLD F. ELKIN,† has been promoted to assistant project engineer in sanitary engineering, Sun Oil Co., Engineering Division, Manufacturing Department, Philadelphia, Pa.

JULES GILBERT, M.D., D.P.H.,* director of health education in the Quebec Ministry of Health, has a summer assignment with the Western Pacific Regional Office of WHO to help prepare a professional training program for that region and in Saigon in September to attend and summarize a Regional Committee Meeting concerning the education and training of professional personnel. His term of service began on June 16, with a two-week briefing period in Geneva.

PRYOR HANCOCK, recently associated with a Louisville law firm, has been appointed director of the Division of Medical Licensure, Kentucky State Health Department.

WAYLAND J. HAYES, JR., M.D., senior surgeon of the U. S. Public Health Service, chief, Toxicology Section, Technical Development Branch, Communicable Disease Center, Savannah, Ga., attended the International Congress of Comparative Pathology at Madrid, Spain, in May where he presented a paper entitled, "Studies of Organic Phosphorus Insecticide Poisoning."

PROFESSOR CURTIS MORRISON HILLIARD,* of the Department of Biology and Public Health, Simmons College, Boston, recently received the Lemuel Shattuck Award from the Massachusetts Public Health Association, "for outstanding service in public health."

CARL P. HUBER, M.D., maternal and child health consultant, Indiana State Board of Health, and director of Obstetrics and Gynecology, Indiana University Medical Center, is the new president of the American Academy of Obstetricians and Gynecologists.

ABELARDO M. INOCENTES, M.D., senior orthopedic surgeon, National Orthopedic Hospital, Mandaluyong, Rizal, Philippines, is at the Kessler Institute for Rehabilitation in West Orange, N. J., for a year to study advanced technics of rehabilitation and reconstructive and orthopedic surgery.

EDWARD C. KENDALL, Ph.D., codiscoverer of cortisone, was awarded the 1952 Kober Medal of Georgetown University at the recent meeting of the Association of American Physicians in Atlantic City, N. J.

GERALD KLATSKIN, M.D., associate professor of medicine, received the first Francis Gilman Blake Award of the Yale chapter of Nu Sigma Nu, which was established "to encourage better teaching of the medical sciences by recalling the example set by Dr. Blake," the late dean of the Yale School of Medicine.

JOHN W. KNUTSON, D.D.S.,* chief of the Division of Dental Public Health, States Re-

lations Division, has been made chief dental officer of the U. S. Public Health Service, Washington, D. C., succeeding BRUCE D. FORSYTH, D.D.S.,† who is now with FSA Regions I and II, with headquarters in Boston, Mass.

JOSEPH S. LAWRENCE, M.D.,† director of the American Medical Association Washington Office, since 1944, will retire on September 1, to be succeeded by the present deputy director, FRANK E. WILSON, M.D.*

EDWIN H. LENNETTE, M.D.,† chief, Viral and Rickettsial Diseases Laboratory, California State Department of Public Health and member of the WHO Expert Committee on Zoonoses, has been on a six-week leave of absence as a consultant on Q fever in Spain at the request of the Spanish Government and under the auspices of WHO.

VERNON W. LIPPARD, M.D., who has been dean of the University of Virginia, School of Medicine, has been appointed dean of the Yale University School of Medicine.

FRIEND LEE MICKLE, Sc.D.,* director of the Bureau of Laboratories of the Connecticut State Department of Health, was recently cited by the University of Connecticut Dairy Club as Honor Guest of 1952, "in recognition of outstanding service in the field of Dairy Manufacturing and to collegiate training in the State of Connecticut."

W. GERALD MORSON, M.D.,† former director of the DeSoto County (Mississippi) health unit, has been made associate director of the Medical Research Department, The Wm. S. Merrell Company, Cincinnati, Ohio.

RUSSELL A. NELSON, M.D., at present assistant to Lowell J. Reed, Sc.D., vice-president of the Hopkins University and Hospital, has been made director of The Johns Hopkins Hospital, succeeding EDWIN L. CROSBY, M.D., who has become executive head of the newly created Joint Commission for the Accreditation of Hospitals.

LUCILE PETRY, R.N.,† assistant surgeon general, U. S. Public Health Service and chief nurse officer, was married recently to Nicholas Charles Leone, M.D., M.P.H., who is engaged in clinical research at the National Institutes of Health, Bethesda, Md.

SOL PINCUS,* consulting sanitary engineer, New York City, is in Europe and Israel, to consult with Swiss engineers on water supply and sewage treatment projects and to discuss the public health program of that country with Director General Ch. Sheba of the Israel Ministry of Health.

MARGARET L. PLUMLEY,† has been appointed executive secretary of the Institute of Medicine in Chicago, Ill., succeeding GRATIA ESHER KNOBEL, deceased.

GRIFFITH E. QUINBY, M.D., M.P.H.,* surgeon of the U. S. Public Health Service, was transferred in February from the Malaria and Typhus Appraisal Unit of the Communicable Disease Center in Atlanta, to the Toxicology Section of the Technical Development Branch, Savannah, Ga.

KATHERINE RAHL, former supervisor of health and physical education, Oregon State Department of Education, has been appointed health education consultant, American Social Hygiene Association, New York City.

EMMA SCHNEIDER, R.N., former assistant chief nurse for the Blood Bank Program of the Peoria Chapter of the American Red Cross, recently joined the nursing staff, Division of Public Health, Peoria Department of Health, Ill.

L. SHAMBURGER, M.D., associate director of the Bureau of Maternal and Child Health, has been promoted to director of the Division of Specialized Medical Services, Virginia State Health Department.

JAMES STEVENS SIMMONS, M.D., Dr.P.H.,* dean of the Harvard School of Public Health, Boston, Mass., received an honorary Doctor of Science degree at the 301st Commencement of Harvard University on June 19.

WILLIAM C. SPRING, JR., M.D.,* commissioner of health, Tompkins County (N.Y.), Department of Health, has been appointed professor of public health practice, Columbia University School of Public Health, New York City.

EDWARD J. STAINBROOK, M.D., for the past four years assistant professor of psychiatry, Yale University School of Medicine, has been appointed professor of psychiatry, New York State University's College of Medicine, Syracuse.

WILLIAM R. STOVALL, M.D., medical director of the Civil Aeronautics Administration and a practising physician in Washington, D. C., took office as president for the coming year at the 23rd Annual Meeting in March, of the Aero Medical Association in Washington.

JOHN V. TAGGART, M.D., of the College of Physicians and Surgeons, Columbia University, was recently awarded the New York Academy of Medicine Edward N. Gibbs Memorial Prize of $2,000 for researches on the etiology, pathology, physiology or treatment of diseases of the kidney, for studies on renal physiology and tubular transport mechanisms.

HAROLD WAINESS, M.S.,† regional milk and

* Fellow.
† Member.

food consultant of the Chicago Regional Office of the Federal Security Agency, has been released by the Public Health Service for a six-month period to become chief sanitary officer of the Chicago Health Department.

JAMES P. WARD, M.D.,* Arizona state director of public health since 1948, has resigned, and has joined the Veterans Administration in Tucson.

LT. COL. STANLEY J. WEIDENKOPF, MSC,† currently assigned as assistant chief of the Medical Service Corps and chief of the Sanitary Engineering Section of the Preventive Medicine Division, in the Office of the Surgeon General of the Army, has been awarded an Oak Leaf Cluster to his Bronze Star Medal for developing an "effective program for the control of environmental disease hazards" during duty in Korea and Japan.

FREDERICK H. WENTWORTH, M.D.,† most recently epidemic intelligence officer, U. S. Public Health Service, Communicable Disease Center, Atlanta, Ga., has been made acting chief of the Division of Communicable Diseases of the Ohio State Health Department, succeeding CHARLES R. FREEBLE, JR., M.D.,† resigned.

E. G. WILL is the new head of the Chemistry Division of the Ohio State Health Department Laboratories.

VERNON M. WINKLE, M.D., M.P.H.,* director of the Kansas City-Wyandotte County Health Department has been made assistant Kansas state health officer and director of the Division of Local Health Administration, a position he held from 1947–1949. He has been succeeded in Kansas City by H. WALLACE LANE, M.D., M.P.H.,† formerly director of the Butler-Greenwood Counties Health Department, which he helped to organize as the first multicounty unit in Kansas.

JOHN M. HENDERSON, C.E.,* has resigned as professor of sanitary science, School of Public Health, Columbia University. His immediate plans include a short trip to Venezuela for consultation on health programs there. His future address will be, Communicable Disease Center, P.O. Box 769, Savannah, Ga.

DEATHS

MARJORIE M. BUCKNAM, R.N.,† executive secretary, Warren County (N.Y.) Tuberculosis and Health Association for the last 32 years, on June 24, after a long illness (Unaffiliated).

ALFRED ROBERT DOHME, PH.D., former president and director at the time of his death, of Sharpe & Dohme, on June 10, at the age of 85.

MORJORIE HARRISON,† health educator with the San Jose (Calif.) Department of Public Health, on May 17, in an automobile accident (Public Health Education Section).

C. F. MCCLINTIC, M.D., director of the West Virginia State Conservation Commission, and state health commissioner from 1941 to 1943, on June 6.

CONFERENCES AND DATES

American Public Health Association. Headquarters, Public Auditorium, Cleveland, Ohio. Oct. 20–24.

Coming in August, September, October, and November:

American Academy of Pediatrics. Annual Meeting. Palmer House, Chicago, Ill. Oct. 20–23.

American Association of Medical Record Librarians. Shoreham Hotel, Washington, D. C. Oct. 13–17.

American Cancer Society. Annual Meeting. New York, N. Y. Oct. 23.

American Congress on Industrial Medicine. Rio de Janeiro, Brazil. Sept. 20–28.

American Dental Association. Annual Meeting. St. Louis, Mo. Sept. 8–11.

American Dietetic Association. Minneapolis, Minn. Oct. 21–24.

American Hospital Association. Philadelphia, Pa. Sept. 15–18.

American Society of Planning Officials. Copley-Plaza Hotel, Boston, Mass. Oct. 5–8.

American Sociological Society. Ambassador Hotel, Atlantic City, N. J. Sept. 3–5.

American Standards Association. Waldorf-Astoria Hotel, New York, N. Y. Nov. 10.

American Water Works Association:

Kentucky-Tennessee Section. Andrew Johnson Hotel, Knoxville, Tenn. Sept. 15–17.

Michigan Section. Post Tavern, Battle Creek. Sept. 24–26.

Minnesota Section. Sioux Falls, S. D. Sept. 10–12.

Missouri Section. Hotel Governor, Jefferson City. Sept. 21–23.

New York Section. Saranac Inn, Upper Saranac Lake. Sept. 3–5.

Ohio Section. Netherland Plaza Hotel, Cincinnati. Sept. 18–19.

Rocky Mountain Section. Frontier Hotel, Cheyenne, Wyo. Sept. 16–17.

Wisconsin Section. Hotel Loraine, Madison. Sept. 16–18.

Association of American Medical Colleges and Conference of Professors of Preventive Medicine. Annual Meeting. The Broadmoor, Colorado Springs, Colo. Nov. 10–12.

Arthritis and Rheumatism Foundation. Annual Meeting. New York, N. Y. Oct. 6.

Civil Service Assembly of the United States and Canada. Hotel New Yorker, New York, N. Y. Oct. 20–23.

Conference for Health Council Work. Annual Meeting. Cleveland, Ohio. Oct. 20–24.

Federation of Sewage and Industrial Wastes Association. Hotel Statler, New York, N. Y. Oct. 6–9.

Florida Public Health Association. Jacksonville. Oct. 9–11.

Illuminating Engineering Society. National Technical Conference. Edgewater Beach Hotel, Chicago, Ill. Sept. 8–12.

Inter-American Congress of Public Health. Havana, Cuba. Sept. 27–Oct. 1.

International City Managers' Association. Kansas City, Mo. Sept. 28–Oct. 2.

International Congress for Housing and Town Planning. Lisbon, Portugal. Sept. 21–27.

National Association for Mental Health. Annual Meeting. Henry Hudson Hotel, New York, N. Y. Nov. 17–19.

Minnesota Public Health Conference. St. Paul Hotel, St. Paul. Oct. 2–3.

National Association of Housing Officials. Hotel Statler, Buffalo, N. Y. Oct. 14–17.

National Safety Congress and Exposition. Chicago, Ill. Oct. 20–24.

National Social Welfare Assembly. Annual Meeting. Hotel Astor, New York, N. Y. Nov. 13–14.

National Society for Crippled Children and Adults. Annual Meeting. Fairmont Hotel, San Francisco, Calif. Oct. 25–30.

North Carolina Public Health Association. Battery Park Hotel, Asheville, N. C. Oct. 9–11.

North Dakota Public Health Association. Dakota Hotel, Grand Forks. Oct. 10–11.

Oklahoma Public Health Association. Norman. Nov. 20–22.

Pennsylvania Public Health Association. Bellevue-Stratford Hotel, Philadelphia. Oct. 3.

Washington State Public Health Association. Chinook Hotel, Yakima. Oct. 5–7.

World Medical Association. Athens, Greece. Oct. 12–16.

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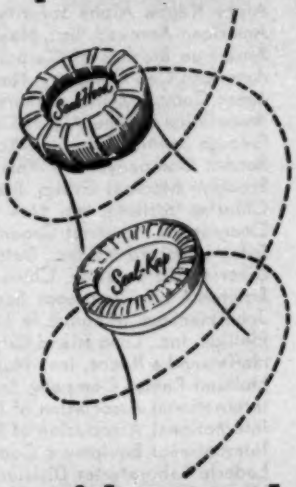

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80th Annual Meeting, American Public Health Association

October 20–24, 1952

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